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WADC TECHNICAL REPORT 55-56
PART I

PROTECTIVE SHOT PEENING OF PROPELLERS

Part I — Residual Peening Stresses

RONALD F. BRODRICK

LESSELLS AND ASSOCIATES, INC.

JUNE 1955

WRIGHT AIR DEVELOPMENT CENTER

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PROPELLER LABORATORY
CONTRACT No. AF 33(616)-2324
PROJECT No. 3346

WRIGHT AIR DEVELOPMENT CENTER
AIR RESEARCH AND DEVELOPMENT COMMAND
UNITED STATES AIR FORCE
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

Carpenter Litho & Prtg. Co., Springfield, O.
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FOREWORD

This report was prepared by Lessells and Associates, Inc., Boston, Massachusetts, under U. S. Air Force Contract No. AF 33(616)-2324. Project No. 3346, "Propeller Blades." The contract was administered under the direction of the Propeller Laboratory, Wright Air Development Center, with Mr. Marshall Baldwin acting as project engineer. The author wishes to acknowledge the assistance of Mr. E. L. Rich, who supervised many of the tests and calculations.

ABSTRACT

This report is one of two reports covering work performed under Contract No. AF33(616)-2324 during the period from 1 February 1954 to 30 April 1955. The object of the investigation was to determine any benefits of shot peening as a means of protecting aircraft propeller blades against the reduction of fatigue strength arising from surface damage. This report covers the investigation of the residual stresses induced by each of a variety of shot peening conditions on (1) AISI 4340 steel of three different heat-treatments, (2) Aluminum alloy 76S-TS, and (3) Titanium alloy Ti 150A. Part 2 of this report will cover fatigue tests on materials which have been shot peened and subjected to simulated propeller damage.

The results indicate that the depth of resulting layer of compressive stress can be controlled quite precisely. Values of depth ranged from 0.001 in. to 0.041 in. for the materials and conditions tested. Average values of the maximum induced compressive stress were equal to the yield point for AISI 4340 at hardness R_c31 and were about 60% of the yield point at hardness R_c52.

PUBLICATION REVIEW

This report has been reviewed and is approved.

FOR THE COMMANDER:

L. M. Taylor

L. M. TAYLOR
Colonel, USAF
Chief, Propeller Laboratory
Directorate of Laboratories

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I. INTRODUCTION

THE PROPELLER DAMAGE PROBLEM

Aircraft propeller blades, like other mechanisms operating under alternating loads, are subject to failure by fatigue. Design calculations and experimental stress measurements make it possible to construct propellers of adequate strength to assure many hours of safe operation, provided the blade surfaces retain their original smooth configuration. Unfortunately, however, propeller blades are subjected to damage by sand, stones, and other foreign objects which impinge upon them during operation. The impingement of these objects produces surface damage in the form of scratches, nicks, or gouges. The resulting discontinuities produce stress concentrations and are thus potential generators of fatigue cracks.

The designer cannot predict the location or magnitude of these areas of damage and cannot, therefore, design a perfectly safe blade, even at considerable sacrifice of aircraft performance. As a result, in order to ensure safety in flight, it is necessary to conduct frequent inspections of propeller blades, judge the seriousness of each individual damage point, and blend out those judged to be of potentially serious nature. It is obvious that this procedure is expensive, both in terms of ground time of the airplane and in the training and maintenance of personnel qualified to assess the severity of damage. In addition, there is always the risk that damage will be overlooked with subsequent serious consequence.

From consideration of the above, it is apparent that any means of protecting the propeller blade from damage by foreign objects, or of minimizing the detrimental effects of this damage, would be of great value. The large expense of detailed inspection would be reduced while flight safety would be maintained.

In the search for a means of providing this surface protection against damage, the possibility of the use of a layer of compressive residual stress, as introduced by shot peening, has arisen. The present investigation is based on this possibility.

SHOT PEENING AND FATIGUE STRENGTH

Many investigators, e. g. (1) [1/] have studied the effects of shot peening on fatigue strength with generally favorable results. The beneficial effect of shot peening is attributed principally to the layer of residual compressive stress imposed at the peened surface. The superposition of this compressive stress on the applied stress of external loads results in a surface stress which is more compressive than otherwise. If the surface stress due to applied load is tensile, the resultant stress is less tensile than it would be in the absence of peening. Similarly, if the applied load produces compressive stress, then the resultant is more compressive than it would be without peening. The fact that peening often increases fatigue strength indicates

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1/ Numbers in parenthesis refer to the Bibliography.

that resultant tensile stresses are primarily responsible for failure. The increased magnitude of compressive stress is not usually detrimental while the decreased value of tensile strength is beneficial.

In many materials, the peened layer is also work hardened. The hardening may contribute to improvement of fatigue properties. Although there is not complete agreement among the various investigators as to the relative roles of compressive stress and work hardening, there is no doubt of the benefits of shot peening in a large variety of engineering applications.

PEENING AND PROPELLER DAMAGE

As previously mentioned, it has been suggested that shot peening might improve the resistance of aircraft propeller blades to fatigue, even after they have been damaged by foreign objects. The reasoning here is that if a layer of compressive stress can be introduced to a depth somewhat greater than the damage depth, then the benefits of the compressive stress should remain even after damage. The total effect of damage is not thoroughly understood, but it is probably a combination of notch effect and work hardening. The notch effect is definitely detrimental, but might be counteracted to some extent by work hardening. Any peening would have to be of sufficient depth so as to be retained after the external damage had been imposed.

METHOD OF INVESTIGATION

On the basis of the problem and the potential solution suggested above, the present program was undertaken. It was desired to determine what alleviation of the propeller damage problem might be obtainable through shot peening. It was also desired to obtain general quantitative residual stress data on a variety of shot peening treatments, since these treatments are applicable to many other machine parts. This information was necessary for application to the propeller problem, and very desirable as an addition to general engineering knowledge.

Thus, the program was conducted in two parts. The first part consisted of the measurement of residual stresses resulting from each of a wide range of shot peening conditions. It is this part which is being reported here. The second portion of the program consisted of the study of the benefits of peening in connection with surface damage. That portion is reported separately in WADC TR 55-56, Part 2.

II. SPECIMENS

SPECIMEN SIZE AND SHAPE

In choosing the specimen size and shape, several factors were considered. It was required that the specimen be of such a form that residual stresses could be measured easily and accurately and that the thickness be representative of critical sections of propeller blades. These requirements

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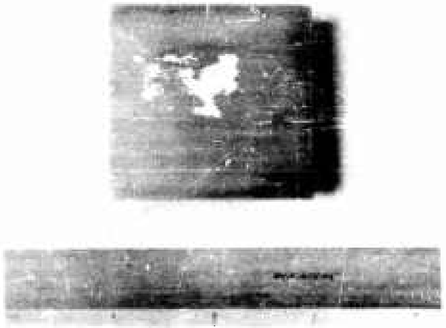


Figure 1. Residual Stress Specimen

conflicted to some extent, especially as regards specimen thickness. For example, assuming a flat specimen, residual stress measurements are more sensitive in a thin section. The peening will not develop high values of stress if the section is too thin, since there is little unpeened material to resist the expansion of the peened surface. Further, it was desirable to use the same specimen thickness for residual stress work as was to be used in the eventual fatigue tests to ensure that the peening would be identical insofar as possible. Thus, the fatigue tests (reported in Part 2) influenced the choice of residual stress specimen. The specimen selected for residual stress measurement is shown in Figure 1. It is 2 in. square and 1/4 in. thick. These dimensions represent what is felt to be a good compromise.

MATERIALS AND TEST PROPERTIES

Residual stress measurements were conducted on Type 4340 alloy steel, 76S-T6 Aluminum Alloy and Ti 150A Titanium Alloy. The steel was forged to 6 ft lengths of 2-1/2 in. x 1/2 in. cross section. The Titanium was in the form of rolled sheet of 1/4 in. thickness. Three heat-treatments of the steel were tested. These treatments were such as to give approximately 130,000 psi, 190,000 psi and 260,000 psi ultimate strengths. Tensile test results are given in Table 1. Tensile specimens for the Titanium were sub-size (1/8 in. dia) since the only material available was in the form of 1/4 in. sheet. Tensile specimens for the highest strength steel were also 1/8 in. dia because of difficulty with the testing machine on larger sizes of this strength. Photomicrographs of the test materials are shown in Figures 2 through 6.

TABLE 1

TENSILE TEST RESULTS

Note: Each number represents the average of 5 specimens.

Material	Hardness	Yield Pt. (psi)	Ultimate Strength (psi)
AISI 4340 (heat E69643)	52R_c	226,000	257,000
AISI 4340 (heat E69643)	41R_c	174,000	187,000
AISI 4340 (heat E69643)	30R_c	107,000	131,000
76S-T6	88R_b	64,000	74,200
Ti 150A	38R_c	163,000	167,000

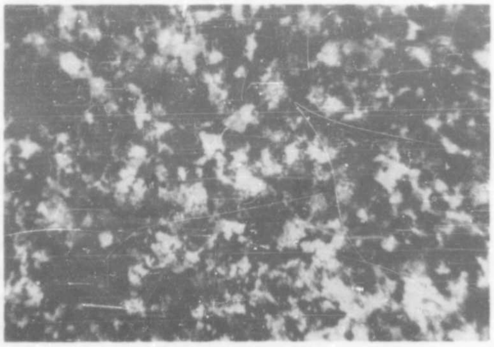


Figure 2. Microstructure of AISI 4340 (R_c 31) - Normalized and Annealed - Nital Etch (250X)

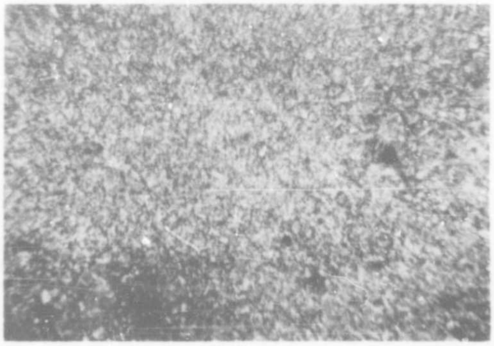


Figure 3. Microstructure of AISI 4340 (R_c 42) - 1475° F O. Q. 900° F Draw Nital Etch (250X)

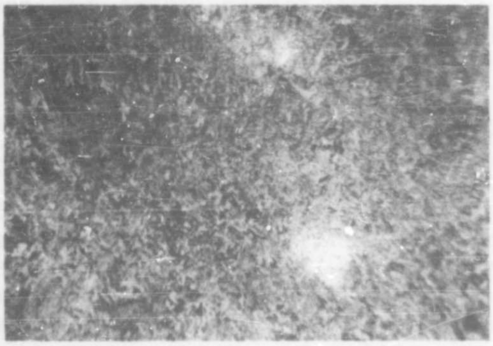


Figure 4. Microstructure of AISI 4340 (R_c 52) - 1475° F O. Q. 500° F Draw Nital Etch (250X)

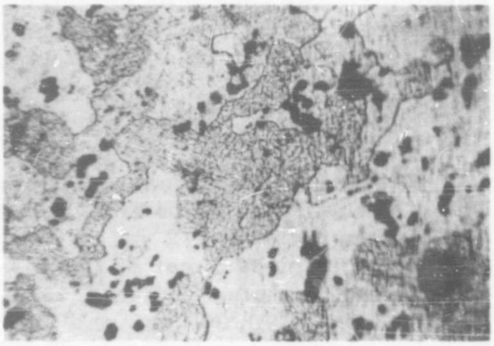


Figure 5. Microstructure of Aluminum 76S-T6 Kellers Etch (250X)

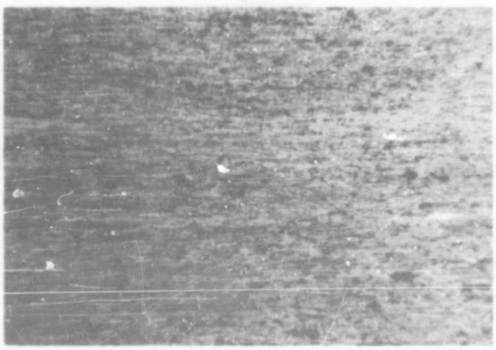


Figure 6. Microstructure of Titanium Ti 150A HF Etch (250X)

III. SHOT PEENING

SPECIFICATIONS AND VARIABLES

Several factors must be considered in the specification of shot peening treatments. The shot size, shot quality, shot velocity, and degree of coverage all affect the degree and manner in which the subject surface is affected. As yet the specifications are somewhat empirical, although some effort is being made to place them on a sound universal basis (2). The development of the Almen arc height strip (2) has permitted appraisal of the degree of peening to which a machine part has been subjected. This strip is peened simultaneously with the part. Since it is peened on one side only, it acquires a curvature as a result of the plastic displacement of material on the peened side. This curvature, in terms of arc height over a specified gage length, is used as the measure of peening intensity. This arc height is used as an indirect measure of the depth of peening, magnitude of compressive stress and degree of coverage attained. As shot size and velocity are increased, the arc height increases. The arc height also increases as coverage increases, approaching exponentially a maximum value for each combination of shot size and velocity.

Specification of peening conditions on the basis of arc height values is empirical, since none of the factors influencing the arc height values can be quantitatively determined from these values. Different combinations of the peening variables can give the same arc heights. In practice, the shot size is usually specified and a series of tests conducted to determine the peening time and shot velocity required to give complete coverage and the desired Almen arc height. The final test of peening conditions can lie only in fatigue testing or service experience. As a result, the actual specifications derive primarily from experience with a particular product.

When quantitative data on the effects of shot peening are desired, it is necessary to resort to more elaborate tests. Of these, coverage determination is the simplest. Coverage, as determined by the arc height strip, applies only to the strip and not to the machine part being peened. For example, soft brass would be completely covered long before the hard steel arc height strip under the same conditions, since the individual shot would make deeper, larger indentations in the soft brass. For accurate measurement of coverage, it is necessary to observe the surface of the subject part and note the percentage of area which has been struck by shot. This method is attributed to Straub (3). It is generally believed that high coverage is desirable for the development of optimum fatigue properties.

Depth of cold work due to peening can often be observed by sectioning and metallurgical examination.

Depth and magnitude of the residual stresses produced can only be determined by residual stress measurements. Presently available techniques for this are time consuming, and are generally restricted to simple specimen geometries. They are, consequently, not used extensively.

In the present study, shot size was specified as an independent variable. Shot velocity was controlled indirectly through nozzle size and air pressure in the air blast type of equipment. Coverage was controlled by means of a

shot metering valve and by peening time, and was measured by observation of the peened surface. Almen "A" and "C" strips were peened simultaneously with each specimen. The strip giving the higher value of arc height was recorded unless that value exceeded 0.015 in., in which case the lower value was used. Further description of the equipment is contained in succeeding paragraphs.

Three degrees of coverage were used in the test. These are designated low, complete and high. Low coverage is defined here as 70% to 85% by area measurement. Complete coverage is 90% to 98%. High coverage is defined here as 4 times the amount of peening required to produce complete coverage.

SHOT PEENING EQUIPMENT

The air-blast cabinet type of peening equipment was used in the present work, as it is more adaptable to laboratory use than is the wheel type. A photograph of the general arrangement of apparatus is shown in Figure 7. A schematic drawing of the cabinet and accessories is shown in Figure 8.

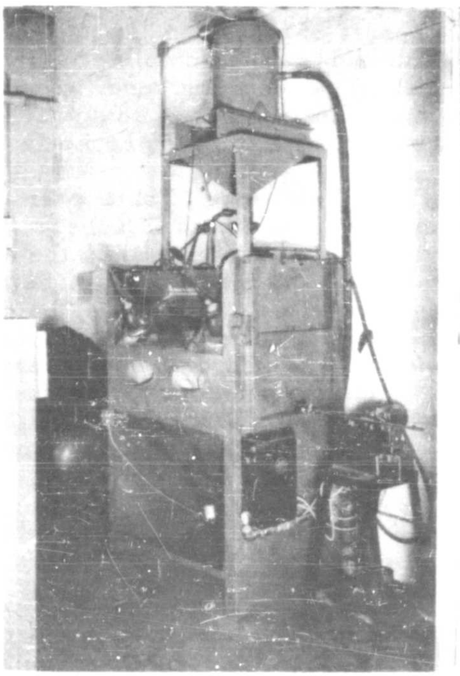


Figure 7. Shot Peening Equipment

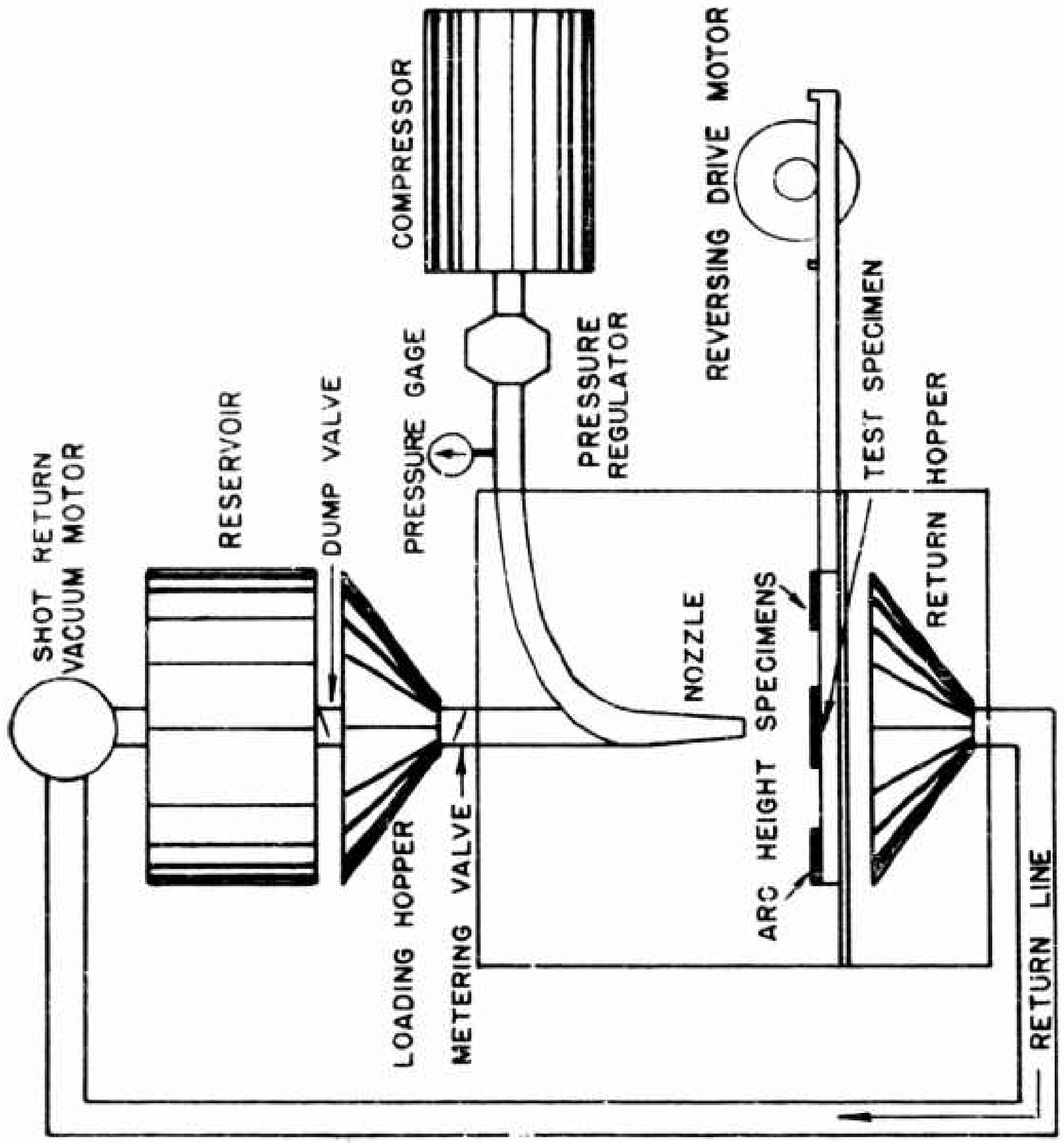


FIGURE 8. SHOT PEENING MACHINE LAYOUT

The cycle of shot travel through the apparatus was altered to some extent from the commercial configuration in order that good control over rate of shot flow and shot velocity could be obtained. Shot was collected in an open hopper above the cabinet. It was fed to the nozzle through a modified gate valve h a calibrated dial, such that an essentially constant rate of flow could be maintained, thence through an open funnel and into the nozzle. At the nozzle, the shot was forced by air pressure to impinge on a moving work carriage. After striking the work, the shot fell to the bottom of the cabinet, where it was fed into a return hose. Suction was maintained on this hose by a large tank-type commercial vacuum cleaner at the extreme op of the machine. Thus, the spent shot was drawn up into the vacuum cleaner tank. A dump valve on the bottom of the vacuum cleaner allowed periodic replenishment of the supply of shot in the open hopper, such that the cycle could be repeated.

The work table was driven by an automatically reversing motor in such a manner that the work passed repeatedly through the shot stream at a lineal speed of ten inches per minute. Figure 9 shows a specimen mounted on the work table. The number of passes through the stream required for a particular specimen was based on the degree of coverage attained.

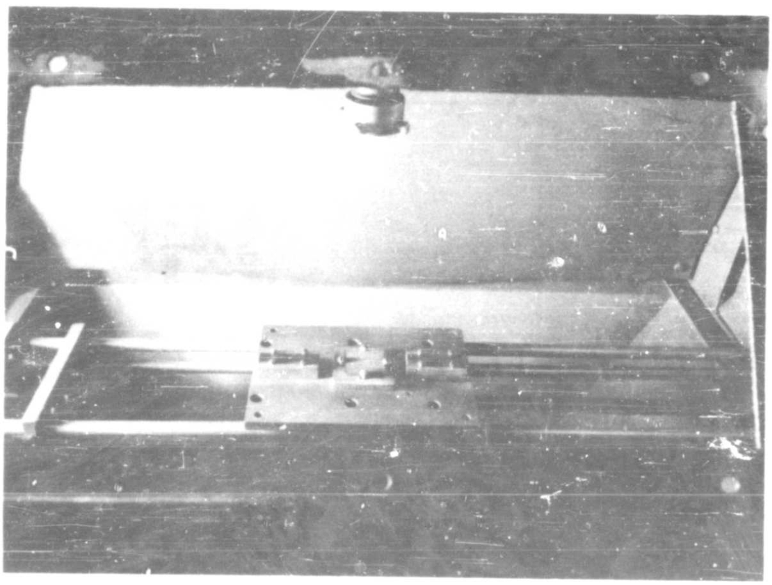


Figure 9. Interior of Peening Cabinet

Air for the peening cabinet came from a 250 psi source, thence through a filter and a regulator. Pressure readings used during the tests were those taken with the nozzle supply valve open and the air flowing. Different nozzles were used with the different shot sizes. A 1/8 in. air nozzle and 1/4 in. shot nozzle was used with the 110 size shot; a 3/16 in. air and 3/8 shot nozzle with the 230 and 390 size shot; a 1/4 in. air and 1/2 in. shot nozzle with the larger sizes of shot.

Commercial steel shot was used in all cases except the 1/8 in. dia size. Shot of this large size consisted of steel bearing balls heat-treated to a hardness of R_c 45-50. Shot size is designated in accordance with SAE specifications by a three-digit number. The first two numbers indicate the shot diameter in thousandths of an inch, except that the 1/8 in. dia shot is given as .125.

It was desired to obtain residual stress data for the entire range of practical peening treatments. In order to limit the number of tests to a reasonable value, it was decided to cover the complete range of peening conditions on each of three hardnesses of AISI 4340 steel, with only a limited number of tests on Aluminum and Titanium. Each type of steel was subjected to each possible combination of five shot sizes, three air pressures and three degrees of coverage. Two specimens of each condition were tested, resulting in a total of 90 specimens of each strength of steel for these conditions. In addition to these, unpeened specimens of each material were analyzed for residual stress.

A further addition came about as follows: Six sizes of shot were utilized in the program, but only five sizes were planned for each group; these sizes being selected such that the softer specimens received generally smaller shot and the harder specimens generally larger shot. Results indicated the desirability of adding tests using the smallest shot on the harder specimens also. Thus, a few more specimens were added to the program. These added tests were performed with the small shot at high coverage and three pressures on the medium and high strength steels.

Tests on the Aluminum and Titanium were restricted to two pressures and one degree of coverage (high).

A complete list of the 324 specimens on which residual stress analyses were conducted is given in Tables 2 through 6. It should be noted that in these tables specimen numbers are consecutive in accordance with the peening treatments, except for the added tests using small shot, and the tests on unpeened material. These specimens are placed in the proper material groups without regard to succession of numbers.

TABLE 2

SHOT PEENING SCHEDULE
RESIDUAL STRESS TESTS

Material - 4340 Steel
Tensile Strength - 130,000 psi

Specimen No.	Shot Size	Air Pressure	Coverage	Specimen No.	Shot Size	Air Pressure	Coverage
1	110	30	L	25	230	50	L
2	110	30	L	26	230	50	L
3	110	30	C	27	230	50	C
4	110	30	C	28	230	50	C
5	110	30	H	29	230	50	H
6	110	30	H	30	230	50	H
7	110	50	L	31	230	90	L
8	110	50	L	32	230	90	L
9	110	50	C	33	230	90	C
10	110	50	C	34	230	90	C
11	110	50	H	35	230	90	H
12	110	50	H	36	230	90	H
13	110	90	L	37	390	30	L
14	110	90	L	38	390	30	C
15	110	90	C	39	390	30	L
16	110	90	C	40	390	30	C
17	110	90	H	41	390	30	H
18	110	90	H	42	390	30	H
19	230	30	L	43	390	50	L
20	230	30	L	44	390	50	L
21	230	30	C	45	390	50	C
22	230	30	C	46	390	50	C
23	230	30	H	47	390	50	H
24	230	30	H	48	390	50	H

TABLE 2 (CONTINUED)

SHOT PEENING SCHEDULE
RESIDUAL STRESS TESTS

Material - 4340 Steel
Tensile Strength - 130,000 psi

Specimen No.	Shot Size	Air Pressure	Coverage	Specimen No.	Shot Size	Air Pressure	Coverage
49	390	90	L	71	660	90	H
50	390	90	L	72	660	90	H
51	390	90	C	73	.125	30	L
52	390	90	C	74	.125	30	L
53	390	90	H	75	.125	30	C
54	390	90	H	76	.125	30	C
55	660	30	L	77	.125	30	H
56	660	30	L	78	.125	30	H
57	660	30	C	79	.125	50	L
58	660	30	C	80	.125	50	L
59	660	30	H	81	.125	50	C
60	660	30	H	82	.125	50	C
61	660	50	L	83	.125	50	H
62	660	50	L	84	.125	50	H
63	660	50	C	85	.125	90	L
64	660	50	C	86	.125	90	L
65	660	50	H	87	.125	90	C
66	660	50	H	88	.125	90	C
67	660	90	L	89	.125	90	H
68	660	90	L	90	.125	90	H
69	660	90	C	271	None	—	—
70	660	90	C	272	None	—	—

TABLE 3

SHOT PEENING SCHEDULE
RESIDUAL STRESS TESTS

Material - 4340 Steel
Tensile Strength - 180,000 psi

Specimen No.	Shot Size	Air Pressure	Coverage	Specimen No.	Shot Size	Air Pressure	Coverage
91	230	30	L	115	390	50	L
92	230	30	L	116	390	50	L
93	230	30	C	117	390	50	C
94	230	30	C	118	390	50	C
95	230	30	H	119	390	50	H
96	230	30	H	120	390	50	H
97	230	50	L	121	390	90	L
98	230	50	L	122	390	90	L
99	230	50	C	123	390	90	C
100	230	50	C	124	390	90	C
101	230	50	H	125	390	90	H
102	230	50	H	126	390	90	H
103	230	90	L	127	660	30	L
104	230	90	L	128	660	30	L
105	230	90	C	129	660	30	C
106	230	90	C	130	660	30	C
107	230	90	H	131	660	30	H
108	230	90	H	132	660	30	H
109	390	30	L	133	660	50	L
110	390	30	L	134	660	50	L
111	390	30	C	135	660	50	C
112	390	30	C	136	660	50	C
113	390	30	H	137	660	50	H
114	390	30	H	138	660	50	H

TABLE 3 (CONTINUED)

SHOT PEENING SCHEDULE
RESIDUAL STRESS TESTS

Material - 4340 Steel
Tensile Strength - 180,000 psi

Specimen No.	Shot Size	Air Pressure	Coverage	Specimen No.	Shot Size	Air Pressure	Coverage
139	660	90	L	164	.125	30	L
140	660	90	L	165	.125	30	C
141	660	90	C	166	.125	30	C
142	660	90	C	167	.125	30	H
143	660	90	H	168	.125	30	H
144	660	90	H	169	.125	50	L
145	780	30	L	170	.125	50	L
146	780	30	L	171	.125	50	C
147	780	30	C	172	.125	50	C
148	780	30	C	173	.125	50	H
149	780	30	H	174	.125	50	H
150	780	30	H	175	.125	90	L
151	780	50	L	176	.125	90	L
152	780	50	L	177	.125	90	C
153	780	50	C	178	.125	90	C
154	780	50	C	179	.125	90	H
155	780	50	H	180	.125	90	H
156	780	50	H	273	None	—	—
157	780	90	L	274	None	—	—
158	780	90	L	313	110	30	H
159	780	90	C	314	110	30	H
160	780	90	C	315	110	50	H
161	780	90	H	316	110	50	H
162	780	90	H	317	110	90	H
163	.125	30	L	318	110	90	H

TABLE 4

SHOT PEENING SCHEDULE
RESIDUAL STRESS TESTS

Material - 4340 Steel
Tensile Strength - 260,000 psi

Specimen No.	Shot Size	Air Pressure	Coverage	Specimen No.	Snot Size	Air Pressure	Coverage
181	230	30	L	205	390	50	L
182	230	30	L	206	390	50	L
183	230	30	C	207	390	50	C
184	230	30	C	208	390	50	C
185	230	30	H	209	390	50	H
186	230	30	H	210	390	50	H
187	230	50	L	211	390	90	L
188	230	50	L	212	390	90	L
189	230	50	C	213	390	90	C
190	230	50	C	214	390	90	C
191	230	50	H	215	390	90	H
192	230	50	H	216	390	90	H
193	230	90	L	217	660	30	L
194	230	90	L	218	660	30	L
195	230	90	C	219	660	30	C
196	230	90	C	220	660	30	C
197	230	90	H	221	660	30	H
198	230	90	H	222	660	30	H
199	390	30	L	223	660	50	L
200	390	30	L	224	660	50	L
201	390	30	C	225	660	50	C
202	390	30	C	226	660	50	C
203	390	30	H	227	660	50	H
204	390	30	H	228	660	50	H

TABLE 4 (CONTINUED)

SHOT PEENING SCHEDULE
RESIDUAL STRESS TESTS

Material - 4340 Steel
Tensile Strength - [illegible]60,000 psi

Specimen No.	Shot Size	Air Pressure	Coverage	Specimen No.	Shot Size	Air Pressure	Coverage
229	660	90	L	254	.125	30	L
230	660	90	L	255	.125	30	C
231	660	90	C	256	.125	30	C
232	660	90	C	257	.125	30	H
233	660	90	H	258	.125	30	H
234	660	90	H	259	.125	50	L
235	780	30	L	260	.125	50	L
236	780	30	L	261	.125	50	C
237	780	30	C	262	.125	50	C
238	780	30	C	263	.125	50	H
239	780	30	H	264	.125	50	H
240	780	30	H	265	.125	90	L
241	780	50	L	266	.125	90	L
242	780	50	L	267	.125	90	C
243	780	50	C	268	.125	90	C
244	780	50	C	269	.125	90	H
245	780	50	H	270	.125	90	H
246	780	50	H	275	None	—	-
247	780	90	L	276	None	—	-
248	780	90	L	319	110	30	H
249	780	90	C	320	110	30	H
250	780	90	C	321	110	50	H
251	780	90	H	322	110	50	H
252	780	90	H	323	110	90	H
253	125	30	L	324	110	90	H

TABLE 5

SHOT PEENING SCHEDULE
RESIDUAL STRESS TESTS

Aluminum 76S-T6

Specimen No.	Shot Size	Air Pressure	Coverage
277	110	30	H
278	110	30	H
279	110	90	H
280	110	90	H
281	230	30	H
282	230	30	H
283	230	90	H
284	230	90	H
285	390	30	H
286	390	30	H
287	390	90	H
288	390	90	H
289	660	30	H
290	660	30	H
291	660	90	H
292	660	90	H
293	None	—	-
294	None	—	-

TABLE 6

SHOT PEENING SCHEDULE
RESIDUAL STRESS TESTS

Titanium Ti 150A

Specimen No.	Shot Size	Air Pressure	Coverage
295	110	30	H
296	110	30	H
297	110	90	H
298	110	90	H
299	230	30	H
300	230	30	H
301	230	90	H
302	230	90	H
303	660	30	H
304	660	30	H
305	660	90	H
306	660	90	H
307	780	30	H
308	780	30	H
309	780	90	H
310	780	90	H
311	None	—	–
312	None	—	–

IV. RESIDUAL STRESS MEASUREMENTS

PROCEDURE

The general procedure used here is the outgrowth of many years of experience in the field of residual stress measurement by numerous laboratories. It would be impossible here to cite all those whose efforts have contributed so much to the complex problem. The method used, however, derives more or less directly from methods discussed by Richards, (4) Waisman (5) and Letner (6) plus other unpublished works.

Analysis of the simple specimens used consists of the procedure of removing successive layers of material from one surface and the observation of specimen thickness and curvature after the removal of each layer. Calculation of the stresses can be performed from these data.

The cycle of test operations to which each specimen was subjected, together with comments about each operation, is as follows.

Lap: One 2 by 2 in. surface was lapped to nearly optical flatness, using 800 grit Alundum abrasive suspended in kerosene. It was necessary to use 320 grit on the Titanium in order to prevent galling and seizing between specimen and lapping plate. This coarser grit gave a completely adequate surface for the curvature measurements.

Thickness: Initial thickness was measured by micrometer. The average of five readings was taken as the value of initial thickness.

Weight: Weight was determined to the nearest milligram, using a laboratory balance. The ratio of weight loss to original weight was used as the measure of thickness removed at each step since it was more accurate than direct micrometer measurement of thickness.

Curvature: The curvature of the lapped surface was measured on a modified comparator gage. A photograph of this gage is shown in Figure 10. In operation, the specimen was placed on the gage such that the lapped surface was in contact with three carbide-tipped supports. Two of these are shown as the outer supports in Figure 11. The distance between these two fixed supports served as the gage length of 1-1/2 in. A third fixed support (not shown in Figure 11) served to steady the specimen. A small weight was placed on the specimen to ensure good contact at the supports. This weight was arranged with three guided legs such that the force was applied exactly opposite the fixed supports, thus preventing any bending of the specimen. A fourth carbide tip formed the end of the movable sensitive element of the gage. This was located midway between the two fixed support gage points, as shown in Figure 11. The height of the movable plunger with respect to the fixed supports thus provided a measure of the specimen curvature. This curvature was referenced from an optical flat (flat within 1×10^{-6} in.) or to one of several other standards of known curvature (some shown at bottom of Figure 10). Figure 12 shows a specimen mounted in the gage head. The gage was accurately calibrated with gage blocks. The sensitivity was such that arc height could be estimated to one millionth of an inch. Two observations were taken for each curvature datum point. Each of two operators made

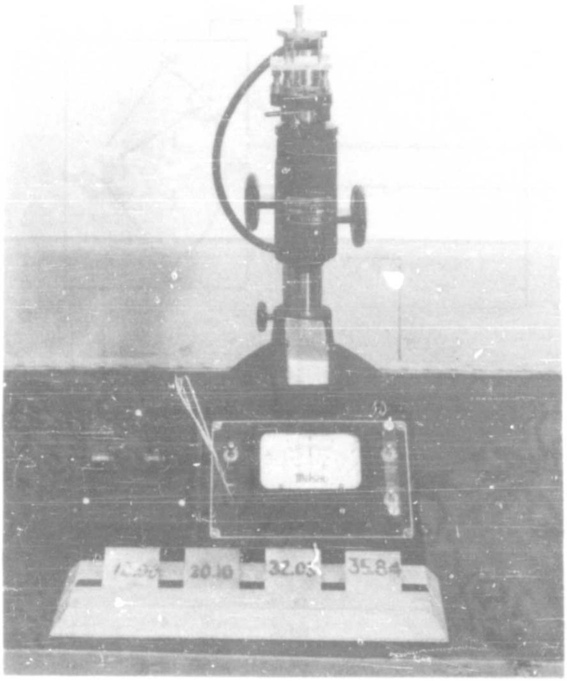


Figure 10. Comparator Gage

one observation. It was required that the spread between observations not exceed 0.000002 in. in some cases and 0.000005 in. in others, depending on the accuracy required on the particular test. Observations of the curvature in each of two perpendicular directions designated A (perpendicular to grain flow) and B (parallel to grain flow) were made on each specimen.

Mask: The lapped surface and edges of the specimen were covered with electrical tape to protect them from attack by the etchant.

Etch: Steel specimens were etched in a solution of one part HNO_3 to ten parts water, by volume. The specimens were placed on a rack and submerged in the solution, as shown in Figure 13. The solution was stirred slowly by a magnetic mixer mounted under the table. The position of the specimen and the stirring action kept the test surface free from bubbles, resulting in a uniform etch. The time of etching was varied from one minute to one hour, according to the amount of material removal desired. The rate of removal was about 0.004 in. per hour.

The Aluminum specimens were etched in a solution of one part HCl to six parts water, by volume. This also removed about 0.004 in. per hour.

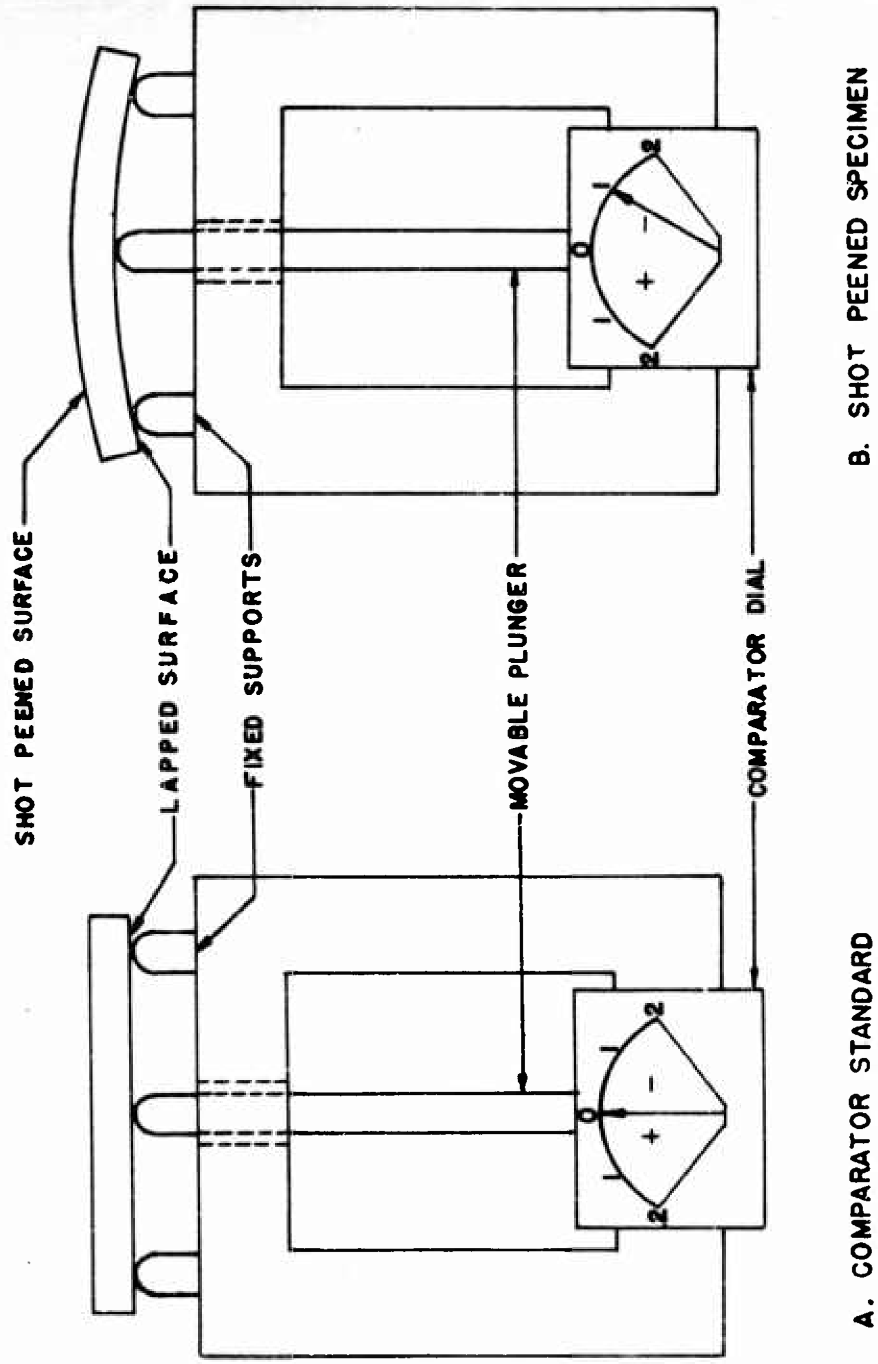


FIGURE II. COMPARATOR GAGE SCHEMATIC

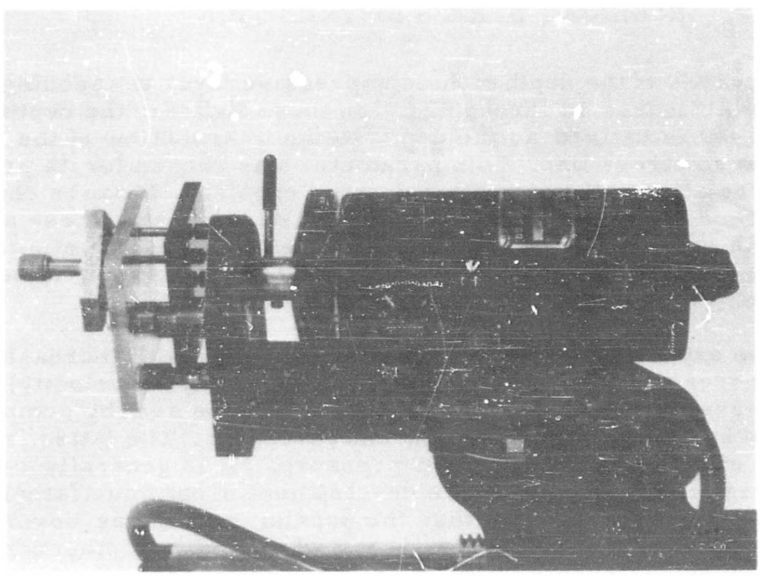


Figure 12. Specimen Mounted in Gage Head

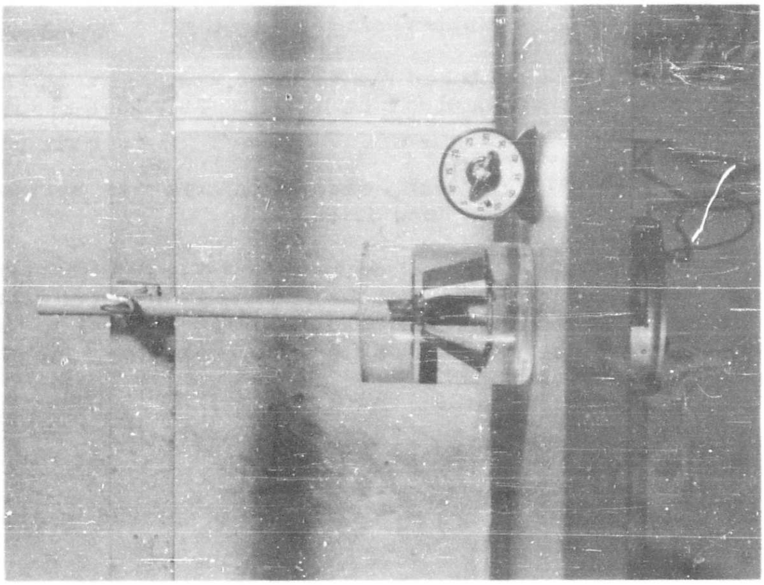


Figure 13. Etching Apparatus

After etching with HCl, the Aluminum was given a short etch in 10% HNO_3 by volume, to remove the black residue from the surface.

The Titanium specimens were etched in a solution composed of 25 grams of potassium fluoride, 60 cc HNO_3 and 600 cc water. This also resulted in a rate of about 0.004 in. per hour.

Wash and Strip: Following the etch, each specimen was scrubbed in cold water, stripped of masking tape, and dried.

Recycle: After drying, each specimen was subjected to additional cycles of weighing, measuring, etching, etc., until the required amount of data had been collected. Most tests were discontinued after about 0.050 in. of material had been removed, since this was sufficiently below the zone greatly affected by shot peening.

CALCULATIONS

The background and the details of calculation are discussed in Appendix I. A sample calculation is included.

V. SUMMARY AND CONCLUSIONS

RESIDUAL STRESS DISTRIBUTION

Summary curves of the depth of the compressive layer vs. peening treatment are given in Figures 14 through 24. In these figures, the depth of the compressive layer is defined as the depth to the intersection of the stress curve with the zero stress line. This parameter was chosen for its probable significance in relation to the propeller damage problem. It can be observed that smooth curves have been drawn through the data points. These are extrapolated to the origin of coordinates on the assumption that infinitesimal shot would give infinitesimal effective depth. The data appear to bear out this assumption.

As would be expected, the effective depth increases with increasing shot size and with increasing air pressure (which relates to shot velocity). The depth also increases with increased coverage, as can be seen by comparison of curves of the same pressure but different coverages. The latter is not as marked as the effects of shot size and pressure. It is generally believed that high coverage is necessary for the development of optimum fatigue properties, as high coverage implies that the peening action has covered all points of the surface. Thus, until data appear which indicate otherwise, application of these values should favor the higher coverages.

The maximum compressive stress vs. ultimate strength of the steel is shown in Figure 25. Each point in this figure represents the average of all peening treatments at high coverage for each strength of the steel. It can

be seen that the increase in degree of induced compressive stress is at a much lower rate than the increase in ultimate strength. In fact, Figure 26 reveals that the softer specimens show compressive stresses averaging about 100% of the yield strength whereas the harder specimens show average maximum compressive stresses of about 60% of the yield strength. A possible explanation for the relatively high value in the soft material lies in the possibility of surface work hardening by the shot. Thus, the surface could be appreciably stronger than the value indicated by tensile tests on the parent material.

The residual stress results on each specimen tested are given in Figures 34 through 357, Appendix II. These are arranged in numerical order of specimen numbers. Tables 2 through 6, wherein specimen numbers are catalogued according to material and peening treatment, serve as an index for these figures.

It will be noted that the residual stress curves show the same general shape regardless of peening treatment. Only the magnitudes and relative depths increase with increasing peening intensity. One possible exception to the above observation can be seen in stresses near the peened surfaces. In some cases (e. g., Specimen No. 221) a reverse curve appears, whereas in others (e. g., Specimen No. 140) this does not appear. This reverse loop has been observed by other investigators (1). It occurs in the region of least accurate measurement of rate of change of curvature. This is also in the region of least accurate knowledge of thickness removed, since the peened surface is initially rough. Thus, it is possible that the reverse curve may be partially a false indication. Additional remarks on precision in this regard will be found in succeeding paragraphs.

PRECISION

Because of the large number of conditions tested and the limited number of specimens at each condition, it is not possible to determine statistically the precision of the tests. However, most of the sources of variation can be recognized and some evaluation of their magnitudes conducted. The first source of variation is, of course, in the test material itself. The degree of uniformity of the parent material is indicated to some extent by the hardness values given on the residual stress results plots. Scatter in data was greatest for the soft steel specimens and is a result of non-uniformity in the normalizing and annealing. However, the shot peening masks this effect to some extent, reducing the scatter in the area affected by peening.

A second source of variation arises in the shot-peening treatment. Variations in peening intensity will appear as variations in residual stress patterns. Although considerable effort was made to control the peening, there is little doubt that some variability did exist. This is borne out to some extent by the variation in Almen arc heights for identical peening treatments. It should be noted, however, that the Almen arc height itself is subject to variation. Figure 27 indicates that this can be considerable. Each point in this figure represents the simultaneous peening of one Almen "A" and one Almen "C" strip.

The other sources of variation lie in the procedure of residual stress analysis. Of the steps used here, the curvature measurement is the most critical, especially during measurement of stresses nearest the surface. The errors arising from this source were reduced by refinements in technique as the tests proceeded. They are largest on the early tests, which were on the steel specimens using the smallest shot at low and medium coverage. The high coverage data were obtained after the refinements in technique had been incorporated.

The possible error in weight measurement for thickness determination is negligible (assuming no human error) as the sensitivity was considerably in excess of that required. Human error in data collection and in calculation was held to a very small amount by a system wherein different operators checked each other.

Some error in theory arises from the fact that the peened surface is rough. The etching procedure attacks the surface protuberances at a somewhat higher rate than it attacks the surface indentations. Thus, the actual stress in the layers removed in the early stages may differ from the calculated value, since the calculation procedure assumes uniform stress throughout each layer removed.

It is felt that the maximum test error, excluding those that are caused by surface roughness and excluding the Titanium specimens, is in the order of 20,000 psi at points very near the surface and in the order of 5,000 psi at deeper points. The average error is probably much less than this but, because of the wide range of conditions tested, is impossible to determine accurately.

The Titanium specimens exhibited a condition not observed in steel or Aluminum. This is indicated in Figure 28 which is a plot of the data from which the stresses are calculated. In this plot, the ordinate represents the arc height measurement indicative of the specimen curvature. It can be noted that this measurement changed drastically during idle periods between tests. This is probably a result of creep and is of such magnitude as to render the results highly unreliable. An attempt was made to vertically displace the points beyond each discontinuity in such a way as to compensate for creep. This resulted in extremely high calculated stresses. The values finally used were taken from a smooth curve drawn through the end points of each group of consecutive tests. This procedure resulted in fairly good agreement with specimens which were tested over relatively short time periods. Nevertheless, the potential error is too great to justify any great degree of confidence in the Titanium results.

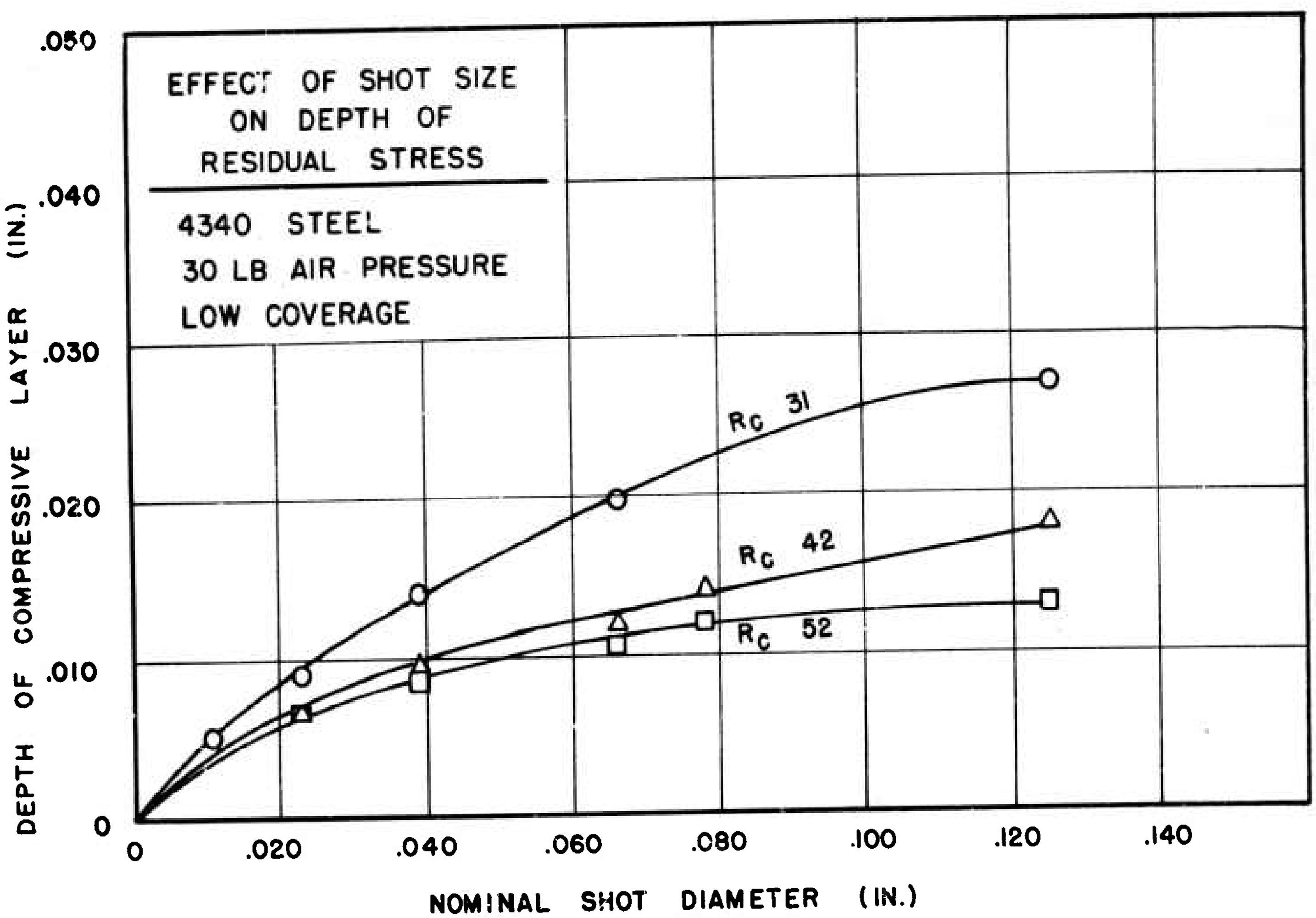


FIGURE 14. EFFECTIVE DEPTH OF PEENING

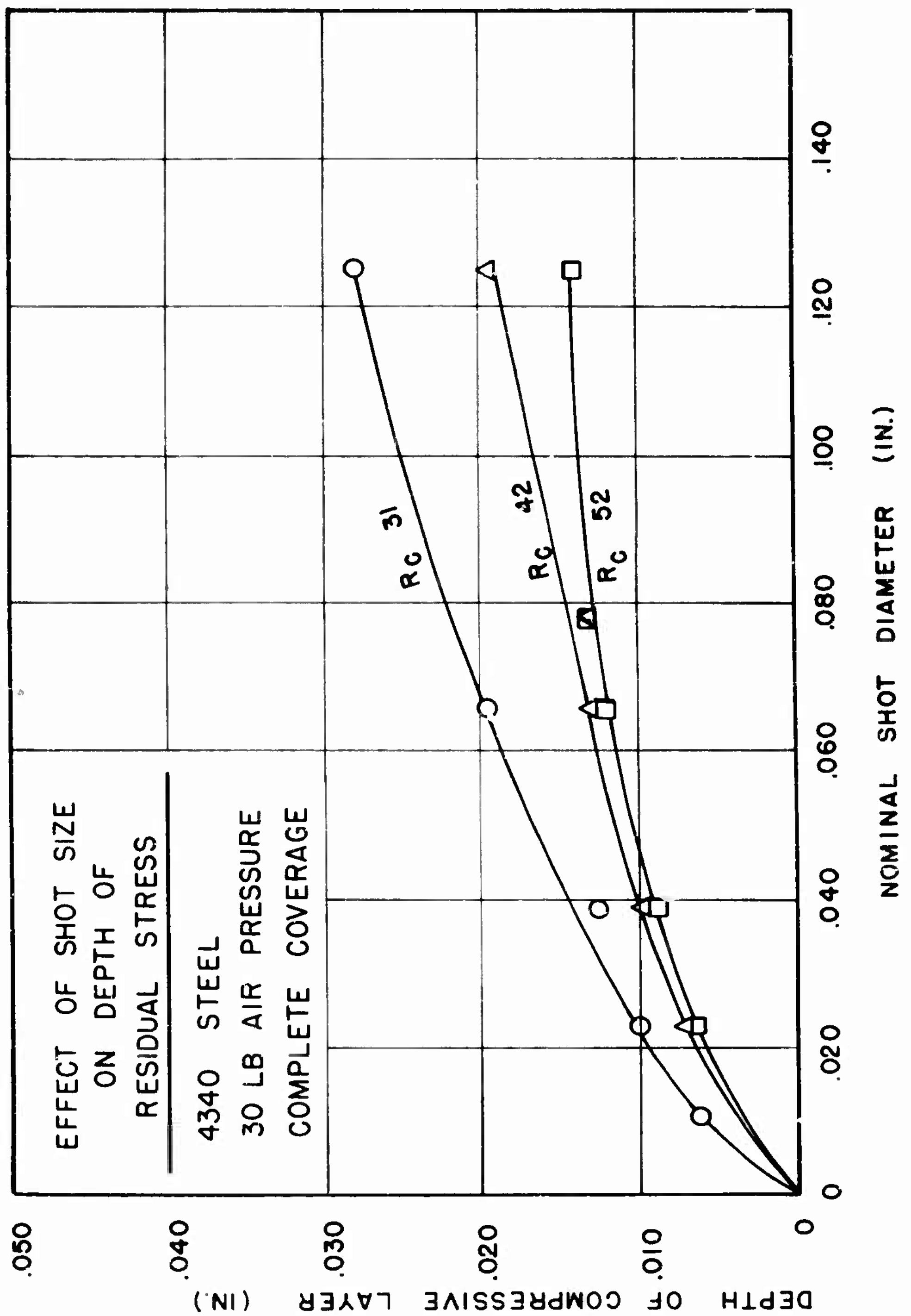


FIGURE 15. EFFECTIVE DEPTH OF PEENING

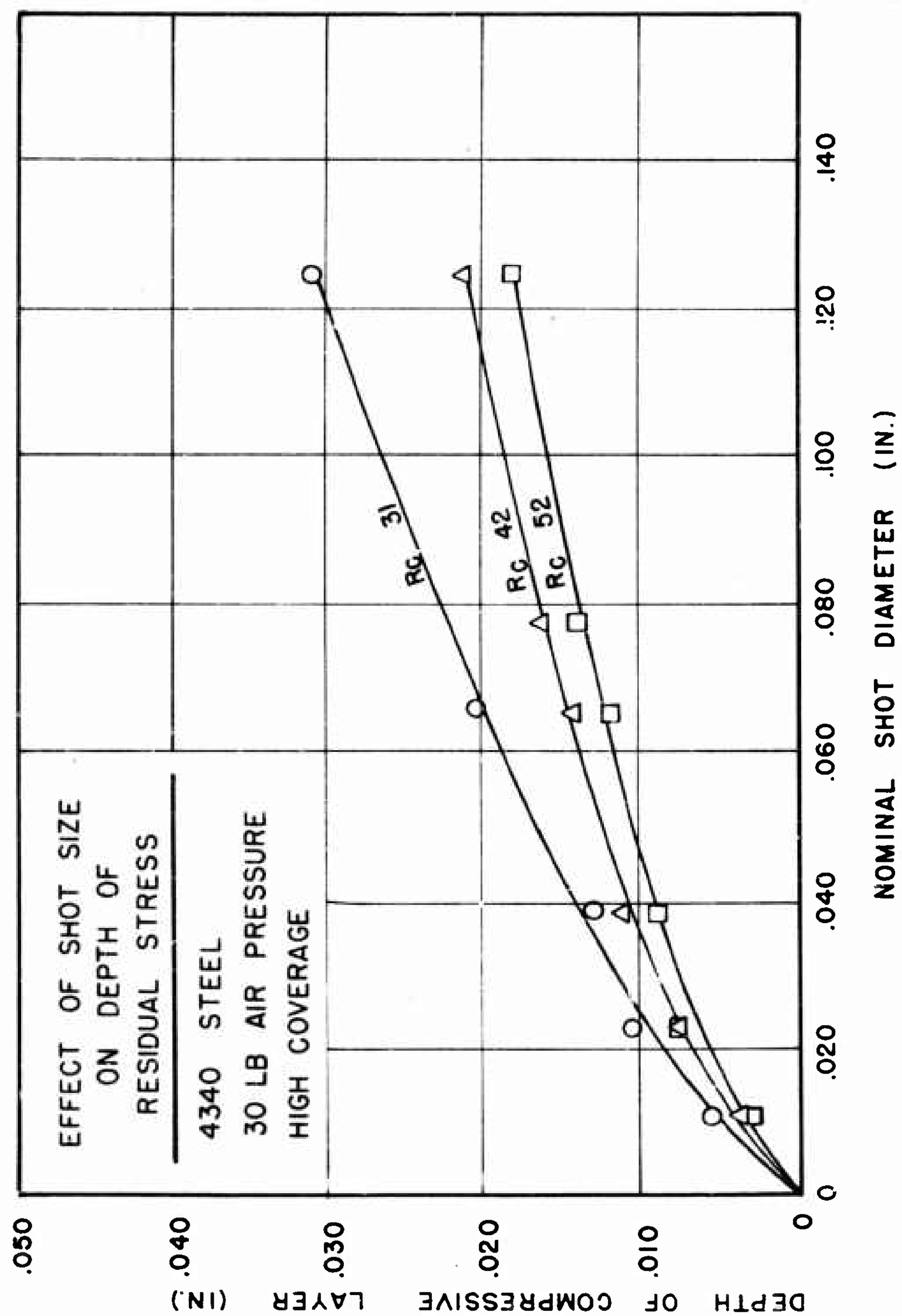


FIGURE 16. EFFECTIVE DEPTH OF PEENING

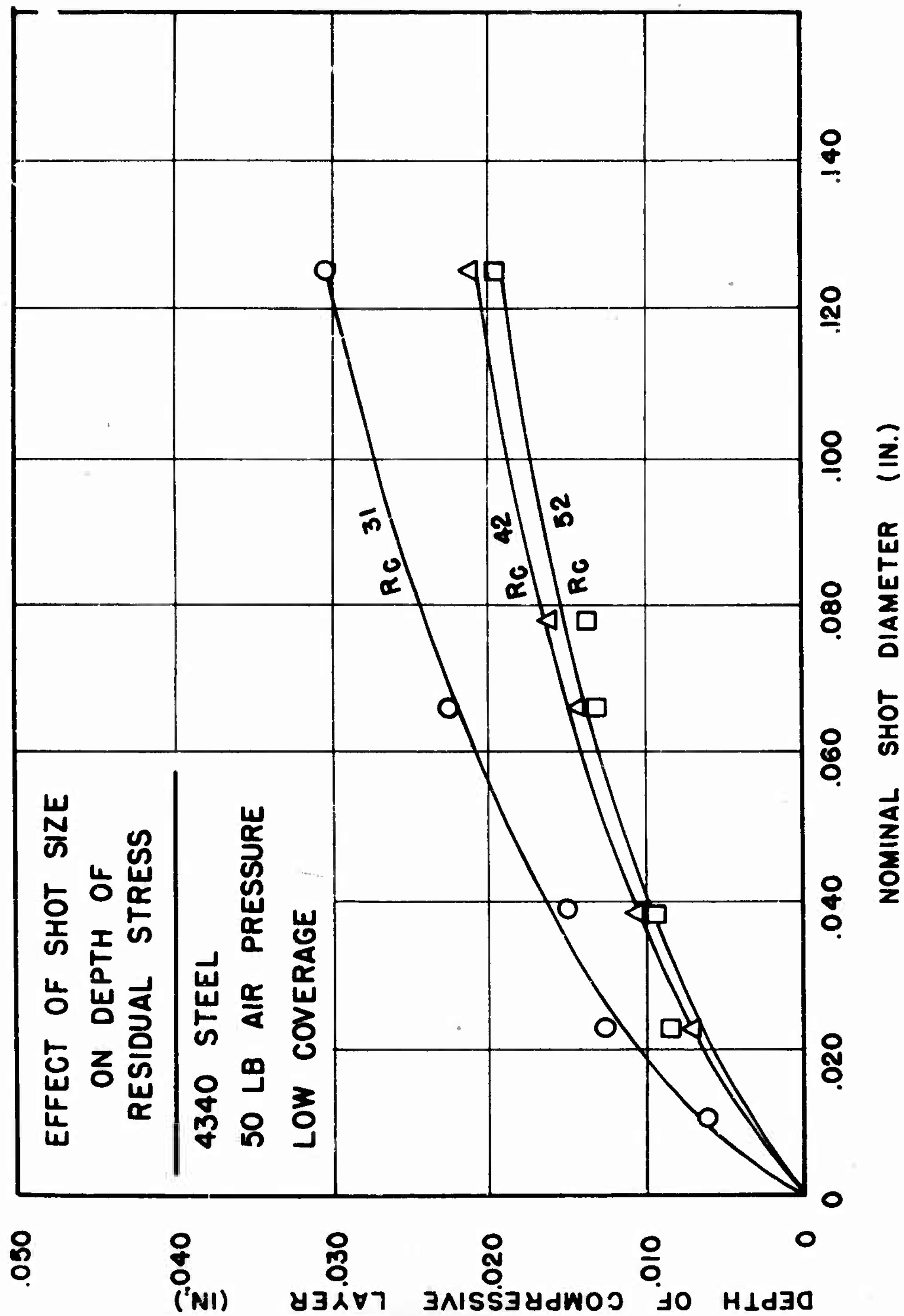


FIGURE 17. EFFECTIVE DEPTH OF PEENING

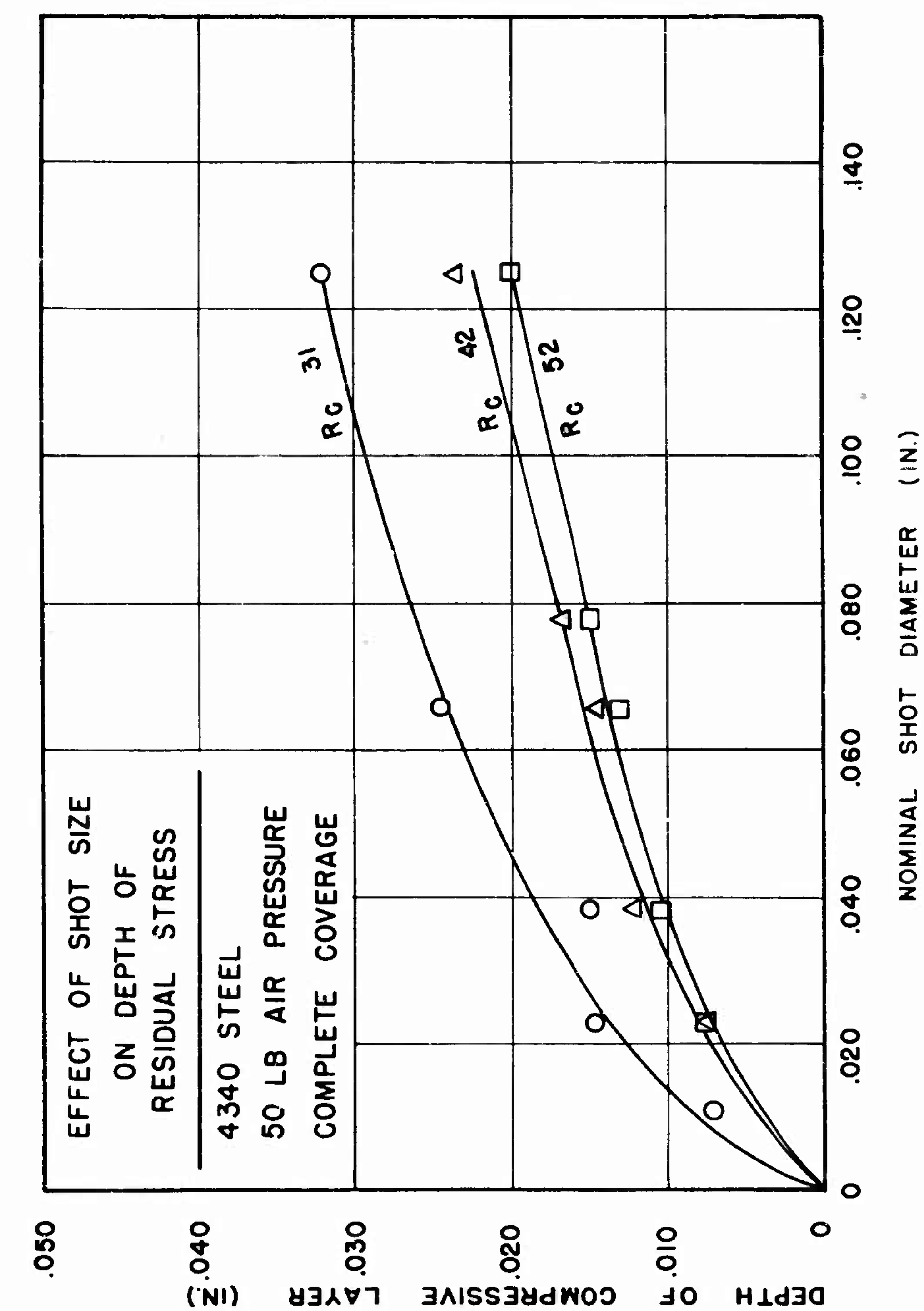


FIGURE 18. EFFECTIVE DEPTH OF PEENING

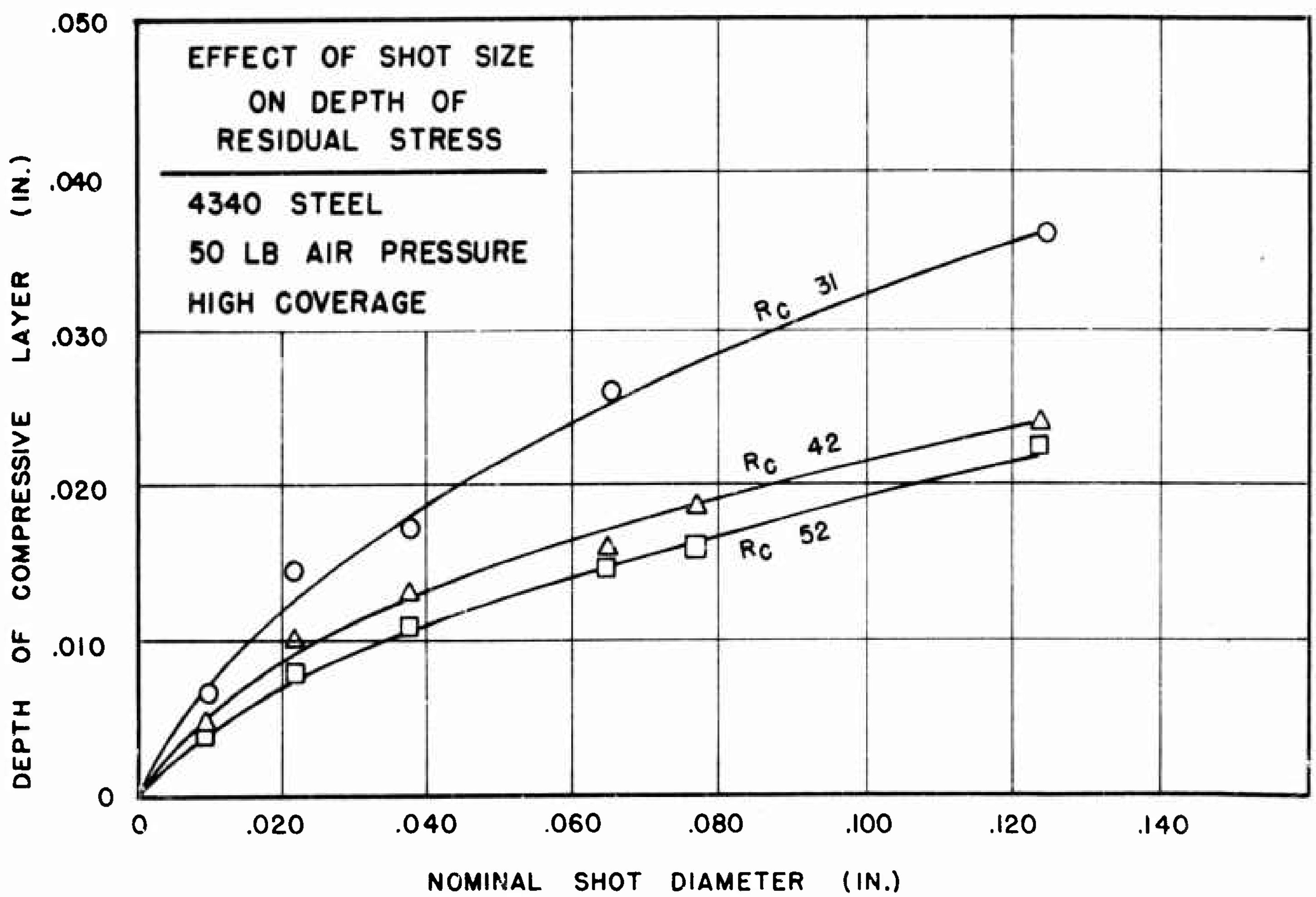


FIGURE 19. EFFECTIVE DEPTH OF PEENING

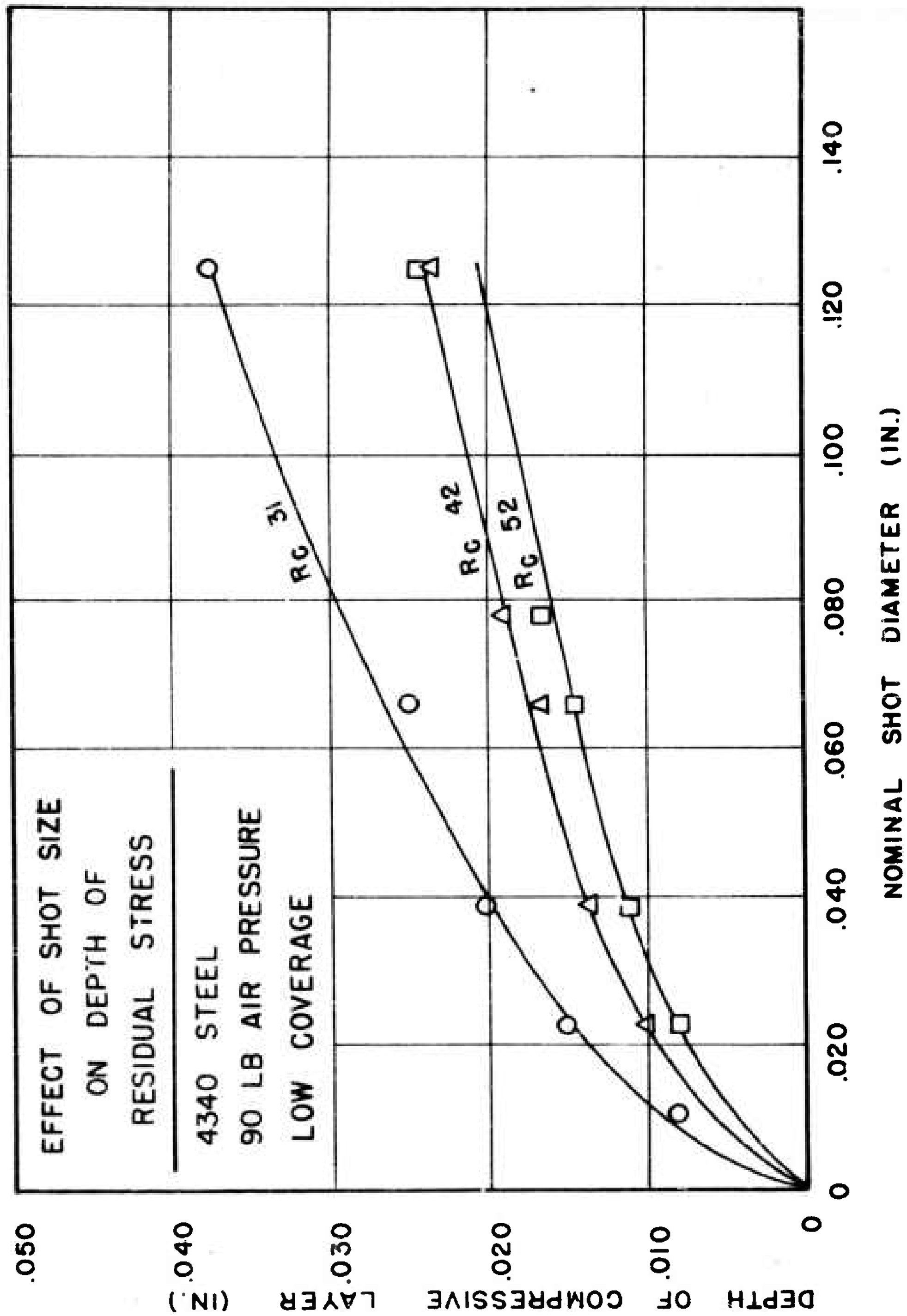


FIGURE 20. EFFECTIVE DEPTH OF PEENING

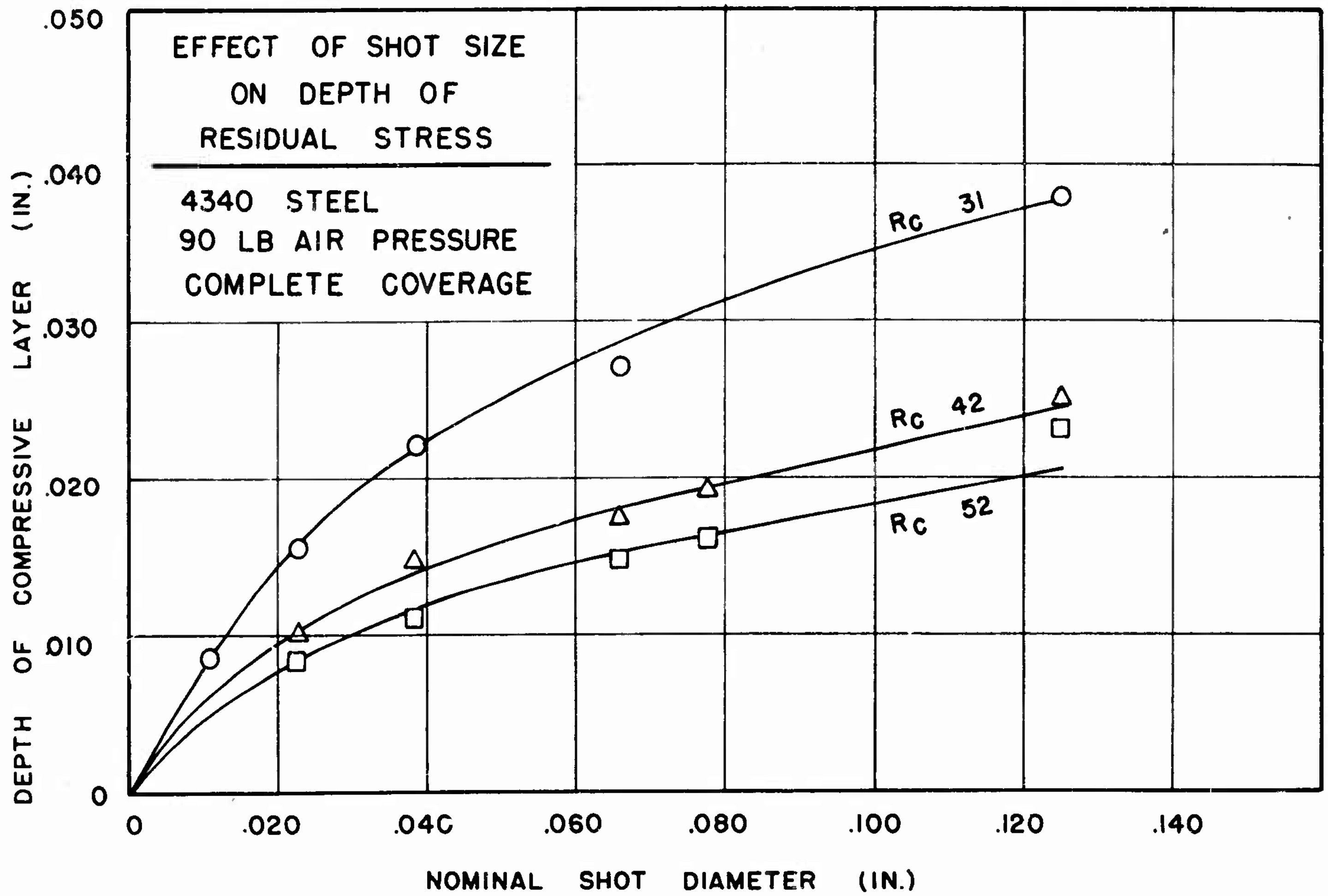


FIGURE 21. EFFECTIVE DEPTH OF PEENING

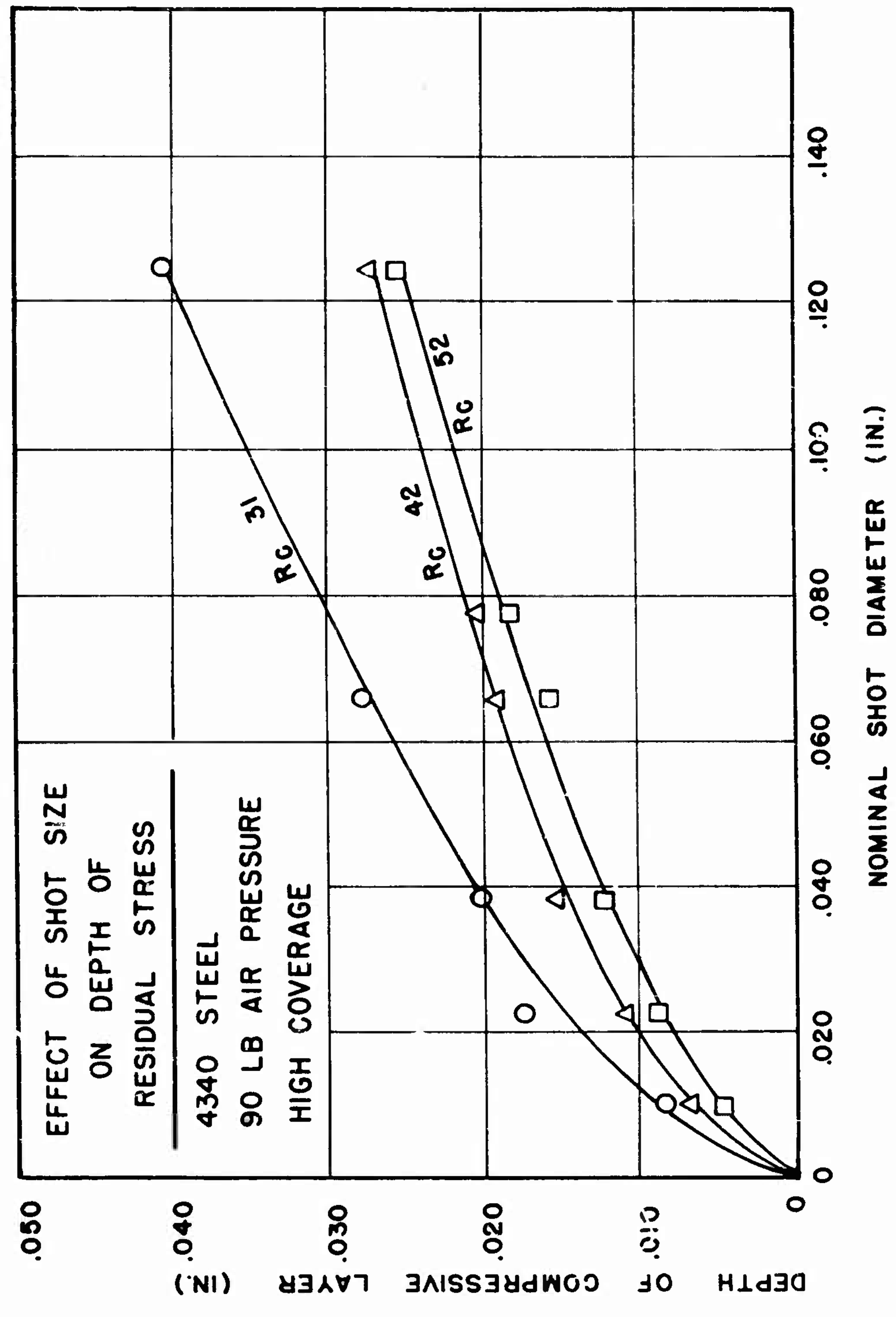


FIGURE 22. EFFECTIVE DEPTH OF PEENING

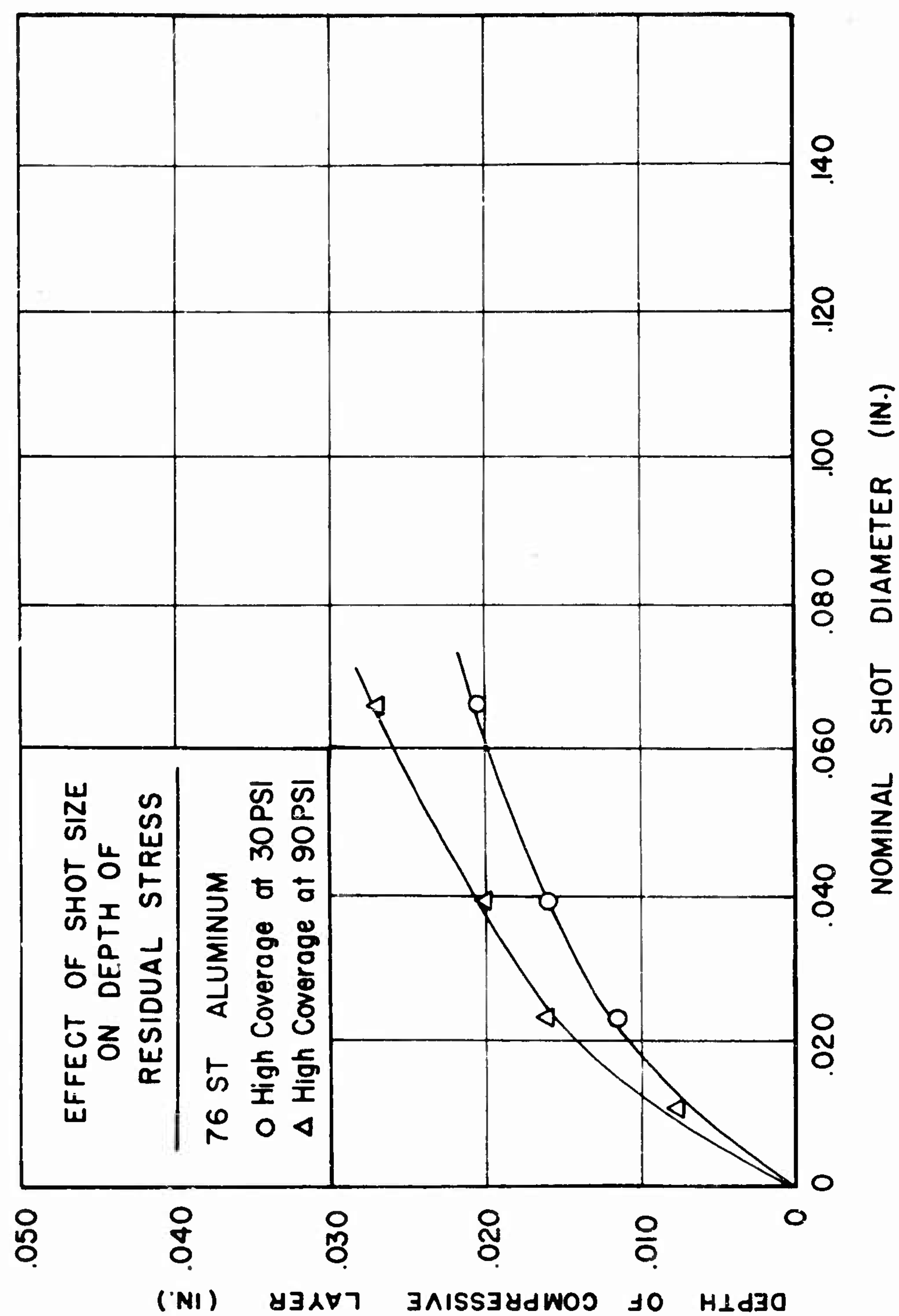


FIGURE 23. EFFECTIVE DEPTH OF PEENING

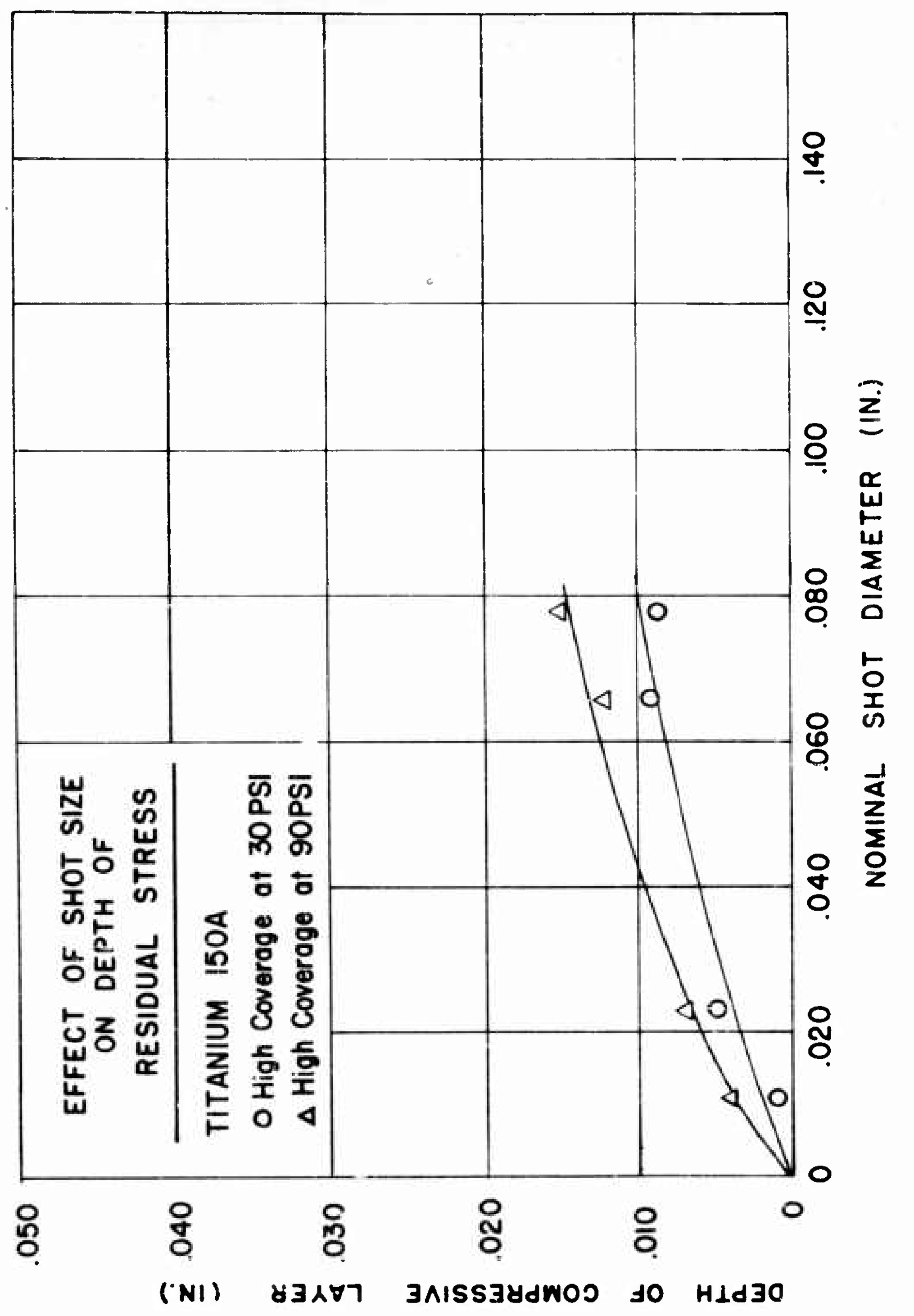


FIGURE 24. EFFECTIVE DEPTH OF PEENING

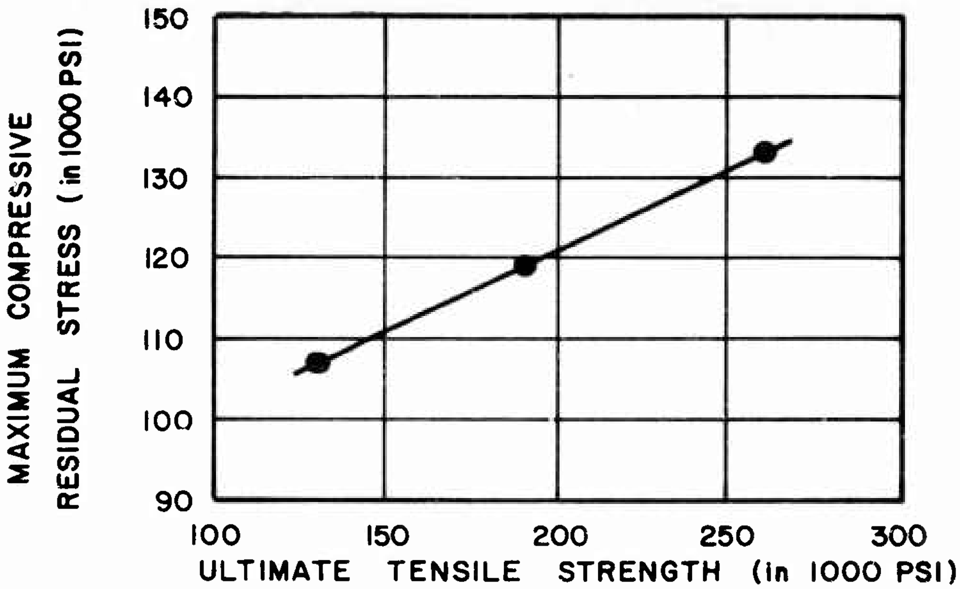


FIGURE 25. RESIDUAL STRESS Vs. TENSILE STRENGTH

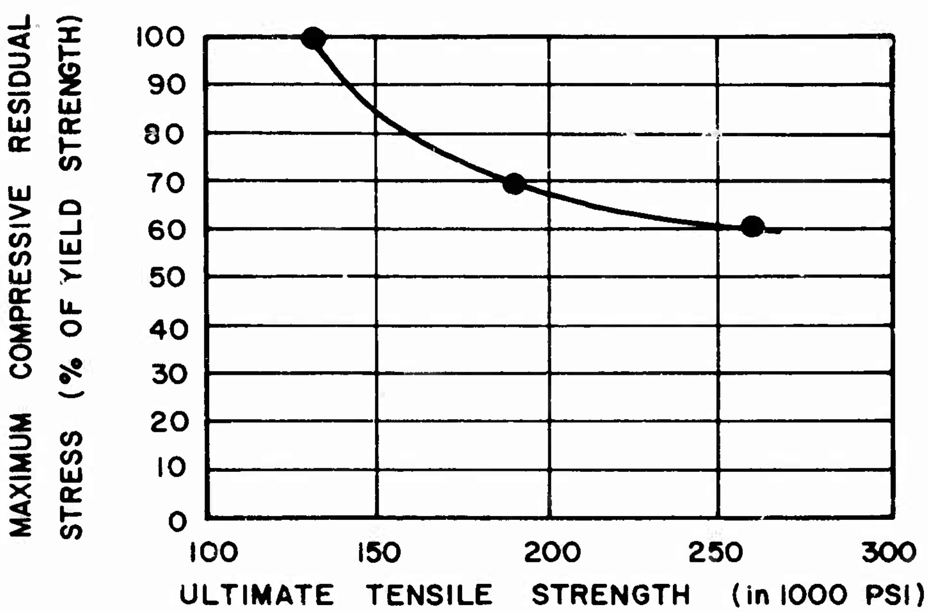


FIGURE 26. RATIO OF RESIDUAL STRESS TO YIELD STRENGTH

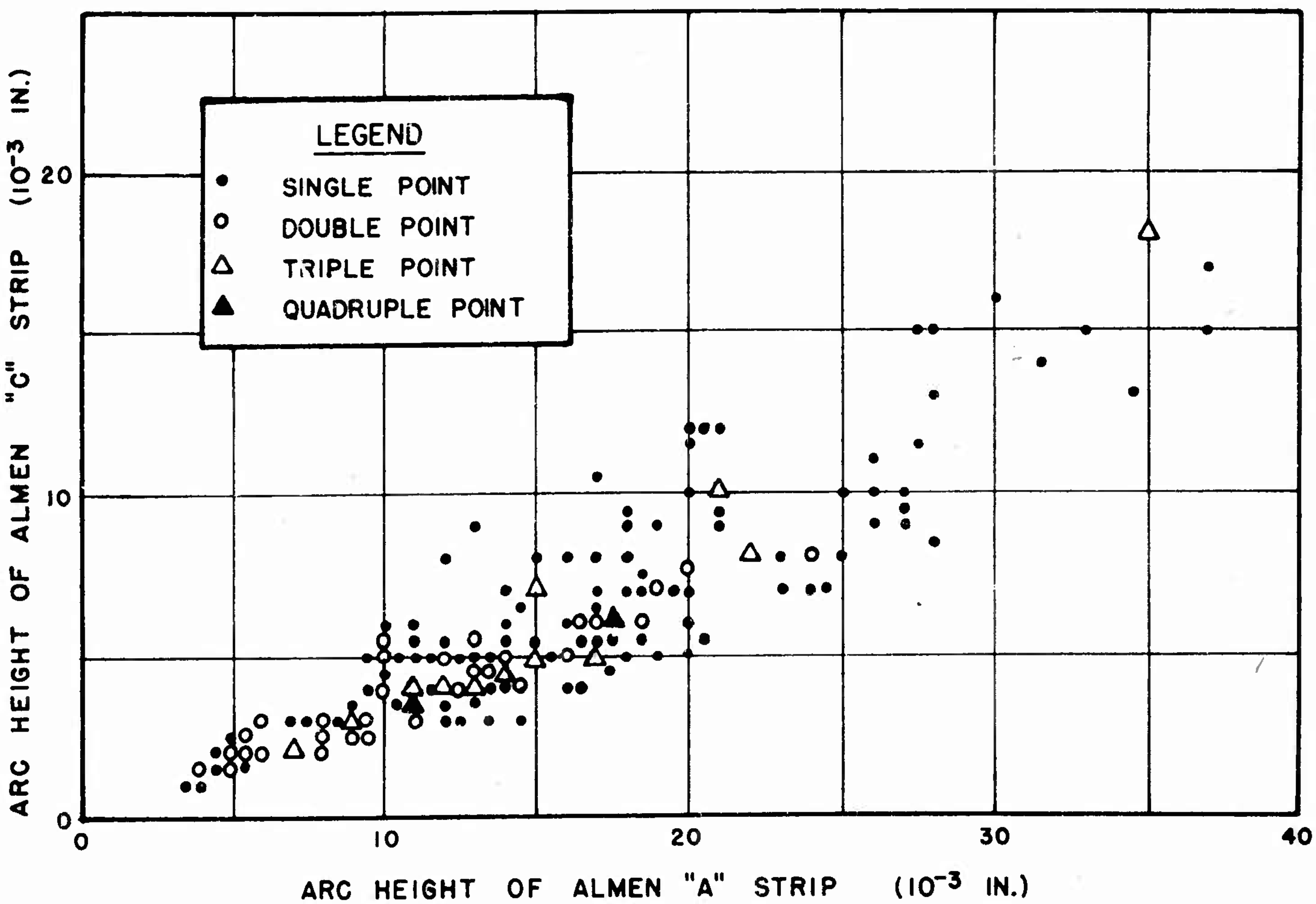


FIGURE 27. ARC HEIGHT DISTRIBUTION OF ALMEN "A" & "C" STRIPS

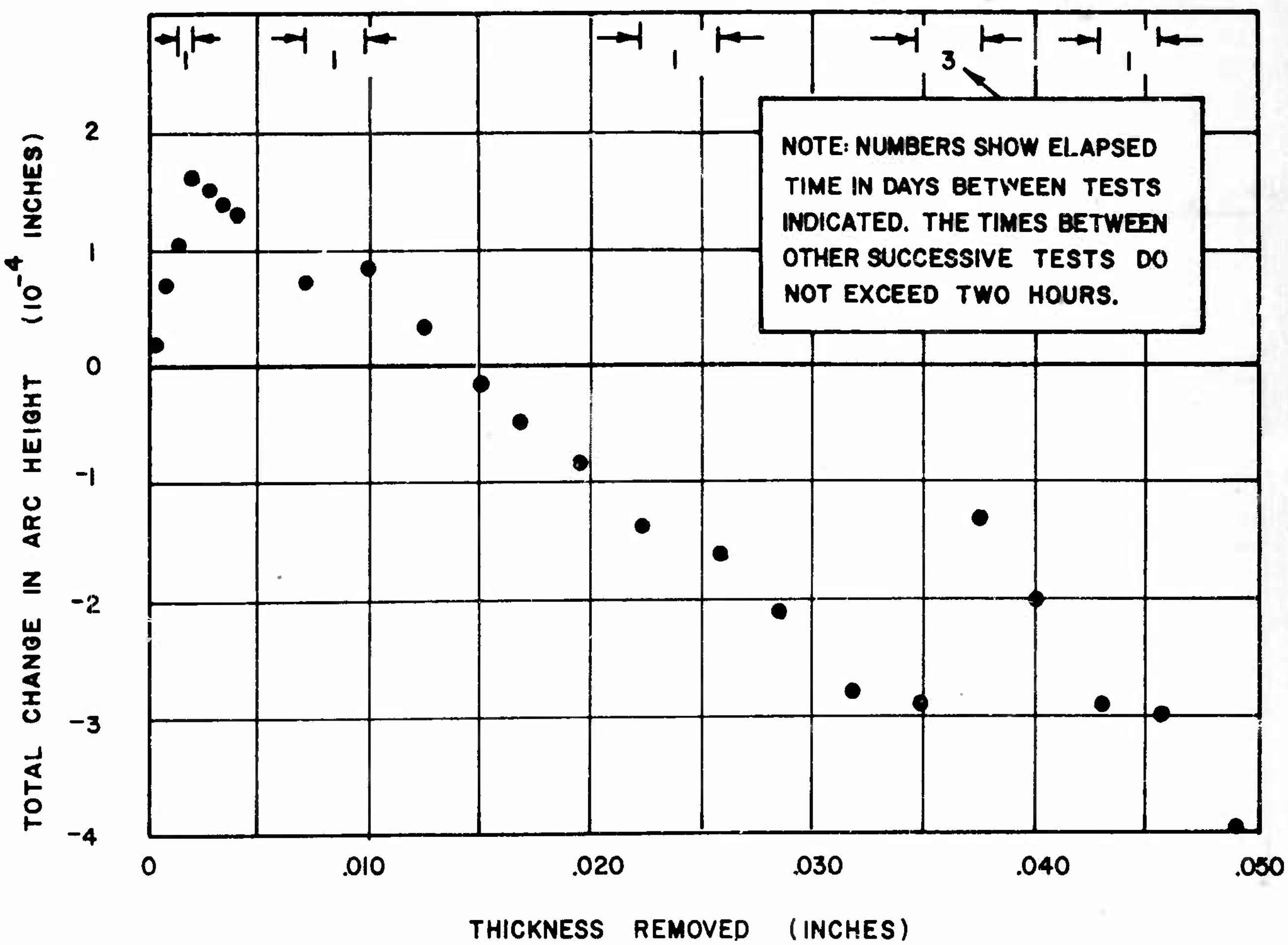


FIGURE 28. INDICATION OF CREEP IN TITANIUM

BIBLIOGRAPHY

1. Mattson, R. L. and Coleman, W. S. Jr. Effect of Shot Peening Variables and Residual Stresses on the Fatigue Life of Leaf-Spring Specimens. Transactions of the Society of Automotive Engineers, New York. Volume 62. 1954. pp. 546-556.

2. SAE Manual on Shot Peening. Special Publications. Nos. 84 and 126. Society of Automotive Engineers, New York.

3. Shot Peening. Fourth Edition. American Wheelabrator and Equipment Corporation, Mishawaka, Indiana. 1951. pp. 31-34.

4. Richards, D. G. A Study of Certain Mechanically Induced Residual Stresses. Proceedings of the Society for Experimental Stress Analysis. Volume III. No. 1. 1945. pp. 40-61.

5. Waisman, J. L. and Phillips, A. Simplified Measurement of Residual Stresses. Proceedings of the Society for Experimental Stress Analysis. Volume XI. No. 2. 1954. pp. 29-44.

6. Letner, H. R. Residual Grinding Stress in Steel. American Society of Mechanical Engineers. Preprint No. 54-A-56. 1954.

APPENDIX I

SAMPLE CALCULATION

LIST OF SYMBOLS

t	=	Thickness (inches).
W	=	Weight (grams).
H	=	Arc height (inches).
dH	=	Total change in arc height (inches).
dt	=	Total thickness removed (inches).
Δt	=	Incremental thickness removed (inches).
dh/dt	=	Slope of curve of total change in arc height vs. thickness removed. (Inches per inch.)
E. I.	=	Even Interval.
θ	=	Angle of the slope on the dH vs. dt curve (degrees).
S.F.	=	Scale factor converting degrees to inches arc height/inches thickness.
G	=	Indicates nomograph operation.
S	=	Stress (psi).
μ	=	Poisson's ratio = 0.3.
E	=	Modulus of elasticity (psi).
2	=	Indicates column used.
A	=	Subscript indicating curvature measured perpendicular to grain flow of metal.
B	=	Subscript indicating curvature measured parallel to grain flow of metal.
o	=	Subscript indicating initial value.
n	=	Subscript indicating value at step number "n."
n-1	=	Subscript indicating value at step number "n-1."

The calculation of stress is based on the equations given by J. F. Waisman (5) for a balanced biaxial stress condition. After introduction of the relation between curvature and arc height (over the gage length of 1-1/2 in.) and proper adjustment of algebraic signs, the residual stress equation appears as follows:

$$S = -S_1 - S_2 + S_3 \qquad (1)$$

Where: $$S_1 = \frac{0.593E}{1-\mu} t_n^2 \frac{dh}{dt} \qquad (2)$$

$$S_2 = \frac{\sum_{o}^{n-1} S \cdot \Delta t}{t_{n-1}} \qquad (3)$$

$$S_3 = -\frac{1.775E}{1-\mu} t_{n-1} (H_o - H_{n-1}) \qquad (4)$$

The solution of the above equations was broken down into a series of simple operations. This involved three types of form: the data sheet, the plot of arc height vs. thickness removed, and the calculation sheet.

A sample data sheet is shown in Figure 29. On this sheet the Reference Height column gives the arc height (above the optically flat condition) of the particular reference plate in use. The Scale Reading columns denote the excess in arc height of the specimens over that of the reference plate in the two perpendicular directions measured. The total arc height of the test plate is the algebraic sum of the reference height and the scale reading. A positive number here represents a condition wherein the specimen curvature is convex on the shot peened side.

A sample calculation sheet is shown in Figure 30 and continued in Figure 31.

The first six columns of the calculation sheet are used for obtaining values suitable for plotting the curve of arc height vs. thickness. Columns 4, 5 and 6 give these values, which are then plotted as shown in Figure 32. This curve represents the total change in arc height for the various amounts of material removed. It should be noted that, as a result of the direction of subtraction, a decreasing arc height is plotted positive upward. For convenience, the data given in Appendix III are taken from Columns 4, 5 and 6 of the calculation sheet. Thus, the slope curves, as in Figure 32, can be plotted directly from the tabulated data. The pairs of points for both the A and B directions are plotted, and a smooth curve drawn through the average between these pairs. In most cases, the points for the two directions are in good agreement. The exceptions usually lie at the greater depths where the calculated stress is fairly insensitive to discrepancies between the two. Thus, the assumption of a balanced biaxial stress condition is justified. Most of the scatter at these greater depths can be attributed to non-uniform annealing of the soft steel, a situation which was corrected in later tests.

The remaining routine of calculation can be simplified by the selection of even intervals of thickness from the plot. These intervals are chosen for each specimen in such a manner as to reveal the salient features of the arc height vs. thickness curve. For example, the intervals are closely spaced near the origin of the plot and near areas of high curvature (of the plot). The intervals selected for the sample calculations are indicated in Column 7 of Figure 30. The average angle of slope for each interval is then measured and recorded in Column 8 in the line corresponding to the higher step number. The angle is then converted to slope by taking the tangent of the angle and multiplying it by the appropriate scale factor to give units of inches arc height/inches thickness, Columns 9 and 10. The thicknesses remaining at Steps (n) and (n-1) on even intervals are readily obtained from Columns 1 and 7 and tabulated in Columns 11 and 13, respectively. From the smoothed dH vs. dt curve the total change in arc height at each even interval of thickness is determined and listed in Column 14. With the preceding information tabulated, Equations (2) and (4) can now be solved. Considering the mass of calculations involved, two nomographs were devised such that, with the information given in Columns 10 and 11, S_1 in Column 12 could be obtained and, having Columns 13 and 14, S_3 in Column 15 could be obtained. Column 16, the change in thickness between steps, comes from Column 13 minus Column 11. The last four columns (17-20) are calculated in successive steps to get the solution of Equations (1) and (3). For example, at Step 1 there was no previous removal and therefore Columns 17 and 18 have values of zero. The total stress, Column 19, can then be computed. From the total stress and the change in thickness between each interval, Column 20 can be determined. This same procedure is repeated continuously for each step until the complete stress distribution is obtained.

A preliminary stress curve is now drawn by plotting Column 19 vs. Column 7. Each point represents the average stress in the layer between it and the previous point. In order to have these points lie in their proper positions in relation to depth, each point is relocated in a direction parallel to the depth axis such that it lies halfway between its original position and the position of the point immediately preceding it on the preliminary curve. A curve through these relocated points represents the residual stress pattern in the specimen. This procedure is depicted in Figure 33.

SAMPLE DATA SHEET

Specimen No. 118 Initial Thickness = .2508

STEP	REFERENCE HEIGHT (10^{-4} in.)	WEIGHT (gm)	SCALE READING H_A (10^{-4} in.)	SCALE READING H_B (10^{-4} in.)
0	7.14	122.9220	.63	.82
1		122.8268	.52	.72
2		122.7148	.39	.52
3		122.6116	.20	.39
4		122.4510	.00	.22
5		122.3682	-.06	.08
6		122.0916	-.40	-.30
7		121.6809	-1.05	-.87
8		121.3699	-1.48	-1.46
9		120.2018	-3.42	-3.30
10	3.18	119.3480	-.91	-.60
11		117.8179	-3.01	-2.84
12		114.2585	-3.05	-2.85
13		111.8356	-2.96	-2.78
14		109.6408	-2.98	-3.06
15		107.0130	-2.80	-2.71
16		104.3427	-2.68	-2.60
17		101.6942	-2.58	-2.43
18		99.0162	-2.46	-2.33
19		96.4788	-2.33	-2.20

Figure 29. Sample Data Sheet

SAMPLE CALCULATION SHEET

Specimen No. 118 Scale Factor = .04

	1	2	3	4	5	6	7	8	9	10
Step	t_o	$\frac{W_{n-1}}{W_o}$	1 - 2	A Direction $H_o - H_{n-1}$	B Direction $H_o - H_{n-1}$	$t_o - t_{n-1}$ 1 · 3	E. I. $t_o - t_n$	Θ	$\tan \Theta$	dh/dt = SF × 9
1	.2508	1	0	0	0	0	.001	57.9	1.594	.0637
2		.999	.001	+.11	+.10	.0003	.002	59.6	1.705	.0681
3		.998	.002	+.25	+.30	.0005	.004	61.9	1.873	.0749
4		.997	.003	+.43	+.43	.0008	.006	64.0	2.050	.0820
5		.996	.004	+.63	+.60	.0010	.008	64.3	2.078	.0830
6		.996	.004	+.69	+.74	.0010	.009	58.5	1.632	.0652
7		.993	.007	+1.03	+1.12	.0018	.010	47.3	1.084	.0433
8		.990	.010	+1.68	+1.69	.0025	.011	35.0	.700	.0280
9		.987	.013	+2.11	+2.28	.0033	.012	23.3	.431	.0172
10		.978	.022	+4.05	+4.12	.0055	.013	10.6	.187	.0075
11		.971	.029	+5.54	+5.42	.0073	.014	-.3	-.005	-.0002
12		.951	.049	+7.64	+7.66	.0123	.015	-1.1	-.019	-.0008
13		.929	.071	+7.68	+7.67	.0178	.020	-1.4	-.025	-.0010
14		.910	.090	+7.59	+7.60	.0226	.025	-1.8	-.031	-.0012
15		.892	.108	+7.61	+7.88	.0271	.030	-2.2	-.038	-.0016
16		.871	.129	+7.43	+7.53	.0324	.035	-3.1	-.054	-.0022
17		.849	.151	+7.31	+7.42	.0379	.040	-3.1	-.054	-.0022
18		.827	.173	+7.21	+7.25	.0434	.045	-3.1	-.054	-.0022
19		.806	.194	+7.09	+7.15	.0487				
20		.785	.215	+6.96	+7.02	.0539				

Figure 30. Sample Calculation Sheet
(Sheet No. 1)

SAMPLE CALCULATION SHEET

	11	12	13	14	15	16	17	18	19	20
Step	t_n = 1 - 7	S_1 G, 10, 11	E. I. t_{n-1}	E. I. $(dH)_{n-1}$	S_3 G, 13, 14	Δt = 13 - 11	$\Sigma S \Delta t$ = 17 + 20_{n-1}	S_2 = 17 / 13	S = $-S_1 - S_2 + S_3$	$S \Delta t$ = 19 16
1	.250	100,000	.251	0	0	.001	0	0	-100,000	-100
2	.249	107,000	.250	.60	1,200	.001	-100	-400	-105,400	-105
3	.247	116,000	.249	1.30	2,500	.002	-205	-800	-112,700	-225
4	.245	125,000	.247	2.80	5,400	.002	-430	-1700	-117,900	-236
5	.243	124,000	.245	4.40	8,400	.002	-666	-2700	-112,900	-226
6	.242	96,000	.243	6.10	11,500	.001	-892	-3700	-80,800	-81
7	.241	64,000	.242	6.80	12,900	.001	-973	-4000	-47,100	-47
8	.240	40,000	.241	7.20	13,500	.001	-1020	-4200	-22,300	-223
9	.239	25,000	.240	7.50	14,000	.001	-1042	-4400	-6,600	-7
10	.238	11,000	.239	7.60	14,000	.001	-1049	-4400	+7,400	+7
11	.237	0	.238	7.70	14,000	.001	-1042	-4400	+18,400	+18
12	.236	1,100	.237	7.75	14,000	.001	-1024	-4300	+19,400	+19
13	.231	-1,400	.236	7.75	14,000	.005	-1005	-4300	+19,700	+99
14	.226	-1,600	.231	7.70	13,900	.005	-906	-3900	+19,400	+97
15	.221	-2,000	.226	7.60	13,400	.005	-809	-3600	+19,000	+95
16	.216	-2,600	.221	7.50	12,900	.005	-711	-3200	+18,700	+94
17	.211	-2,500	.216	7.40	12,200	.005	-617	-2900	+17,600	+88
18	.206	-2,300	.211	7.10	11,700	.005	-529	-2500	+16,500	

Figure 31. Sample Calculation Sheet
(Sheet No. 2)

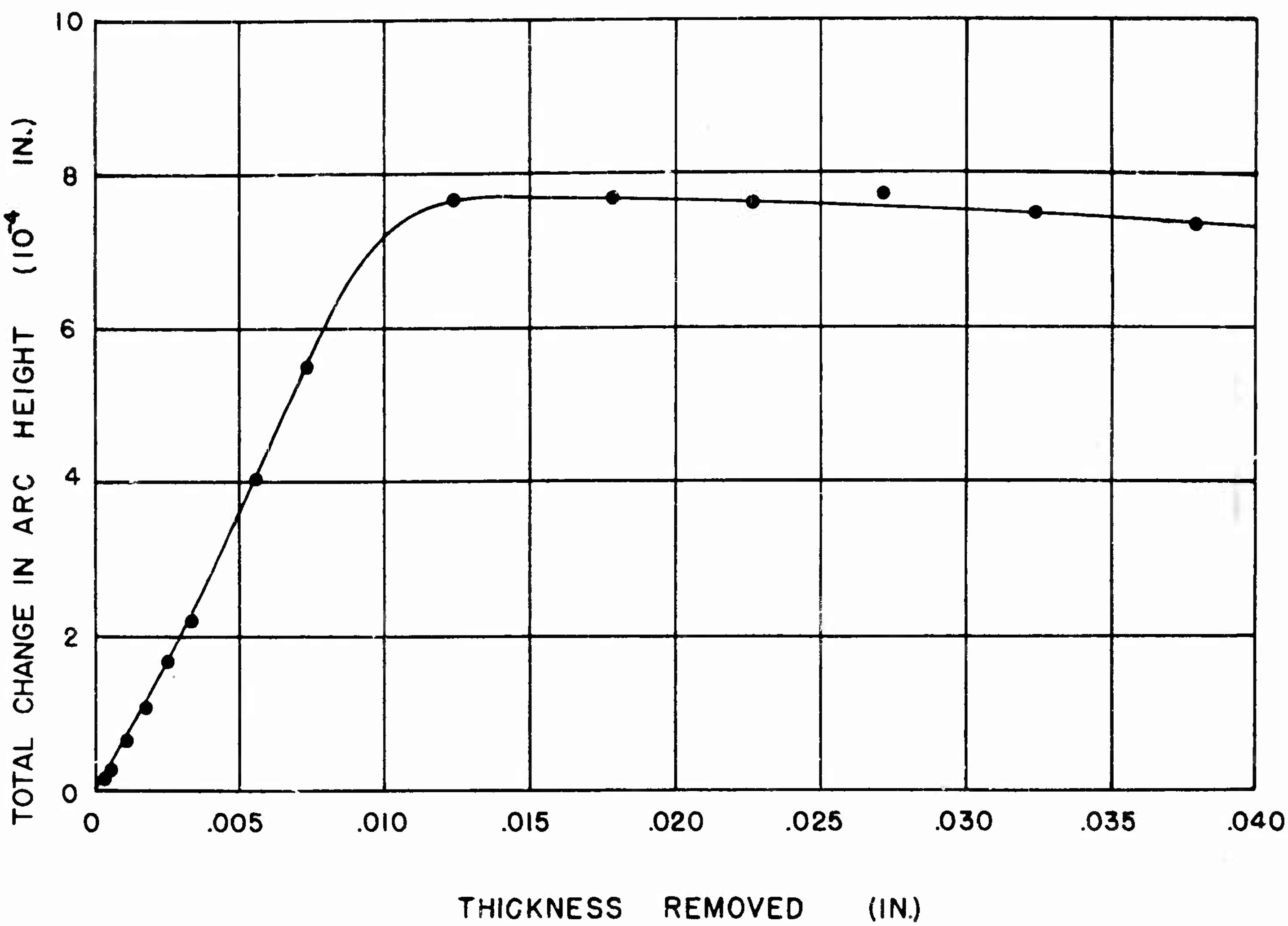


FIGURE 32. CHANGE IN ARC HEIGHT VERSUS THICKNESS REMOVED FOR SPECIMEN NO. 118

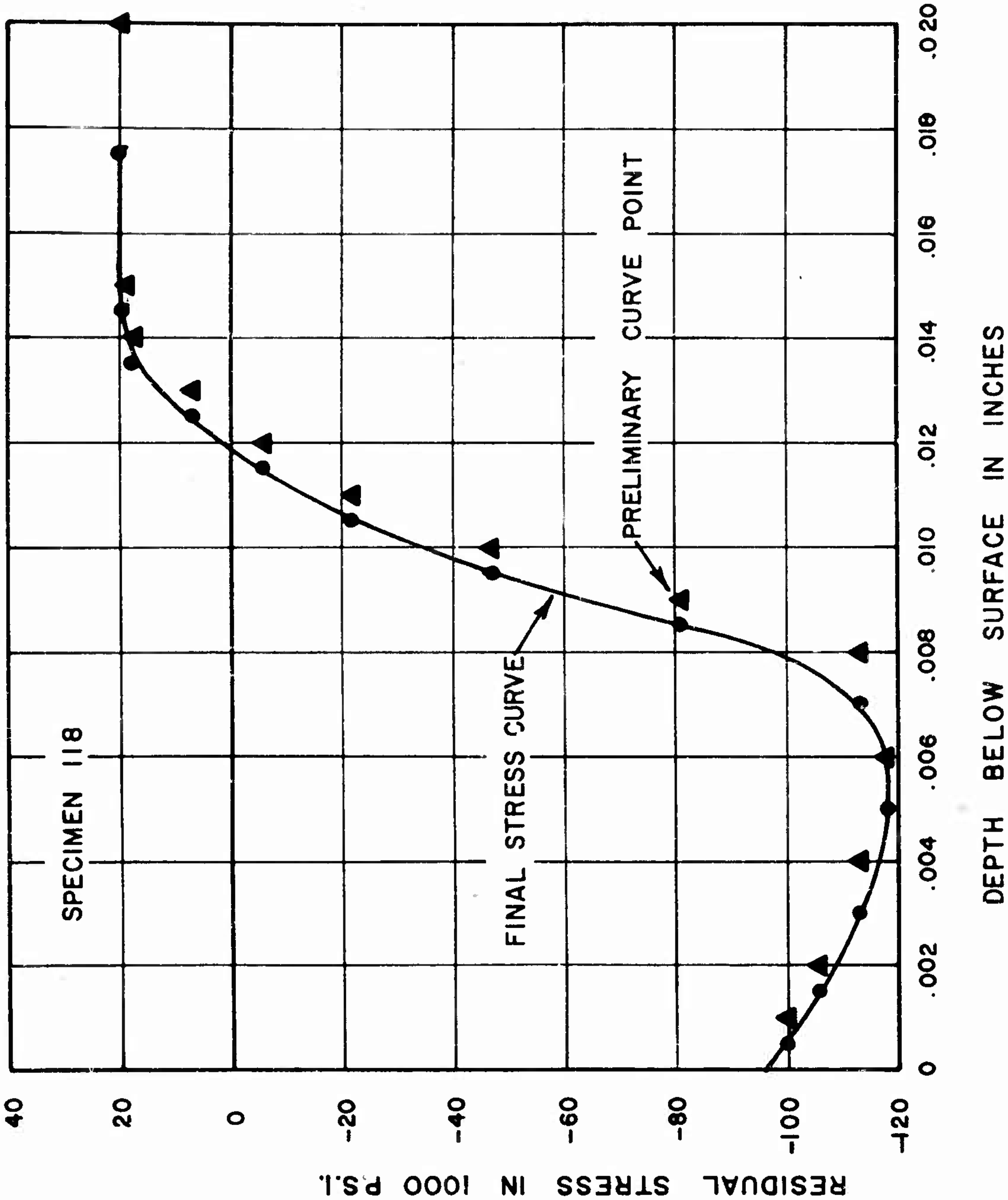


FIGURE 33. SAMPLE RESIDUAL STRESS DISTRIBUTION

APPENDIX II

RESIDUAL STRESS RESULTS

The following pages give the detailed residual stress distributions for all specimens tested. The curves are arranged in numerical order, according to specimen identification numbers. Tables 2 through 6, Pages 10 through 17, serve as an index to these results. The specimen number corresponding to a particular peening condition can be determined from these tables.

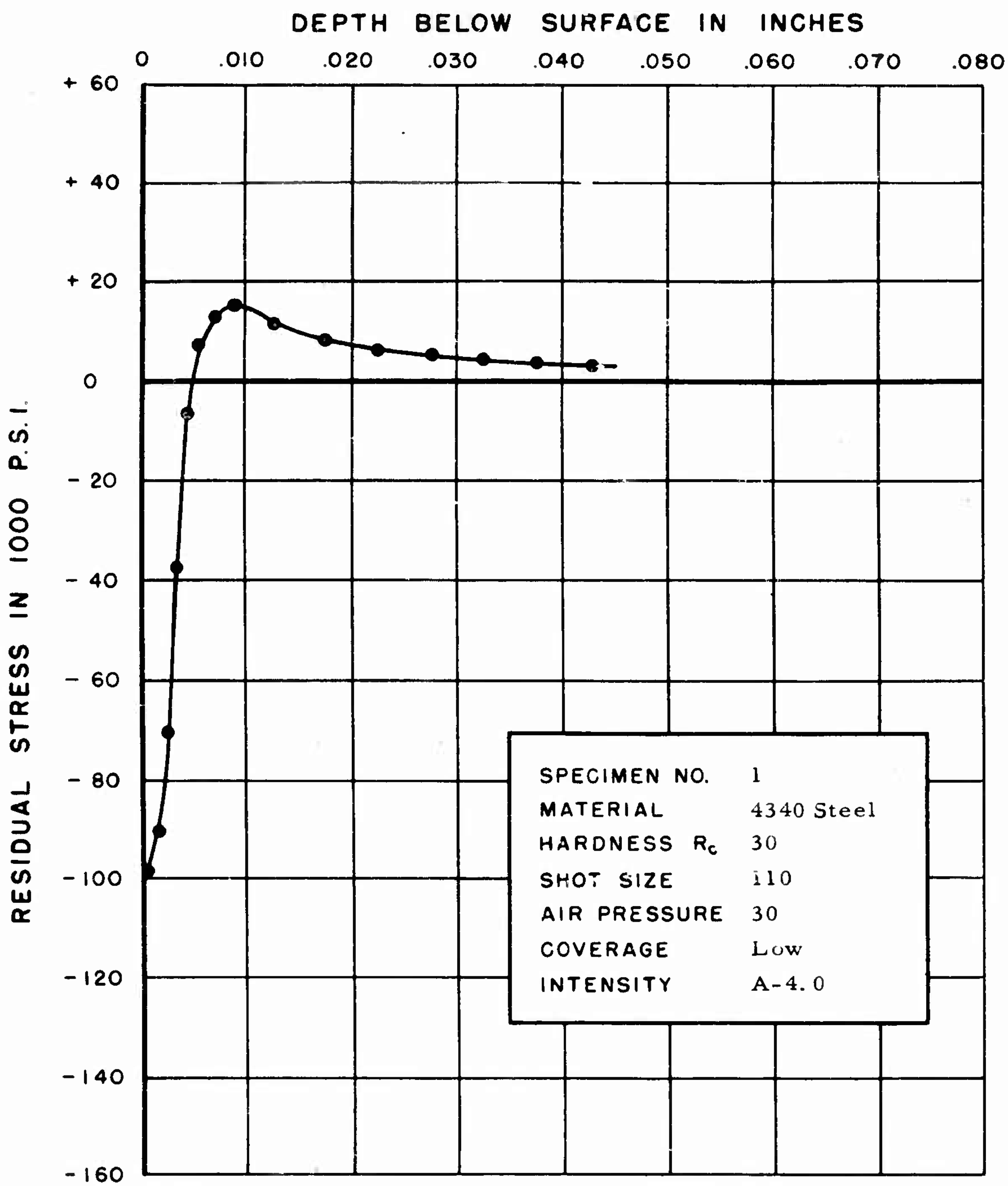


FIGURE 34. RESIDUAL STRESS DISTRIBUTION

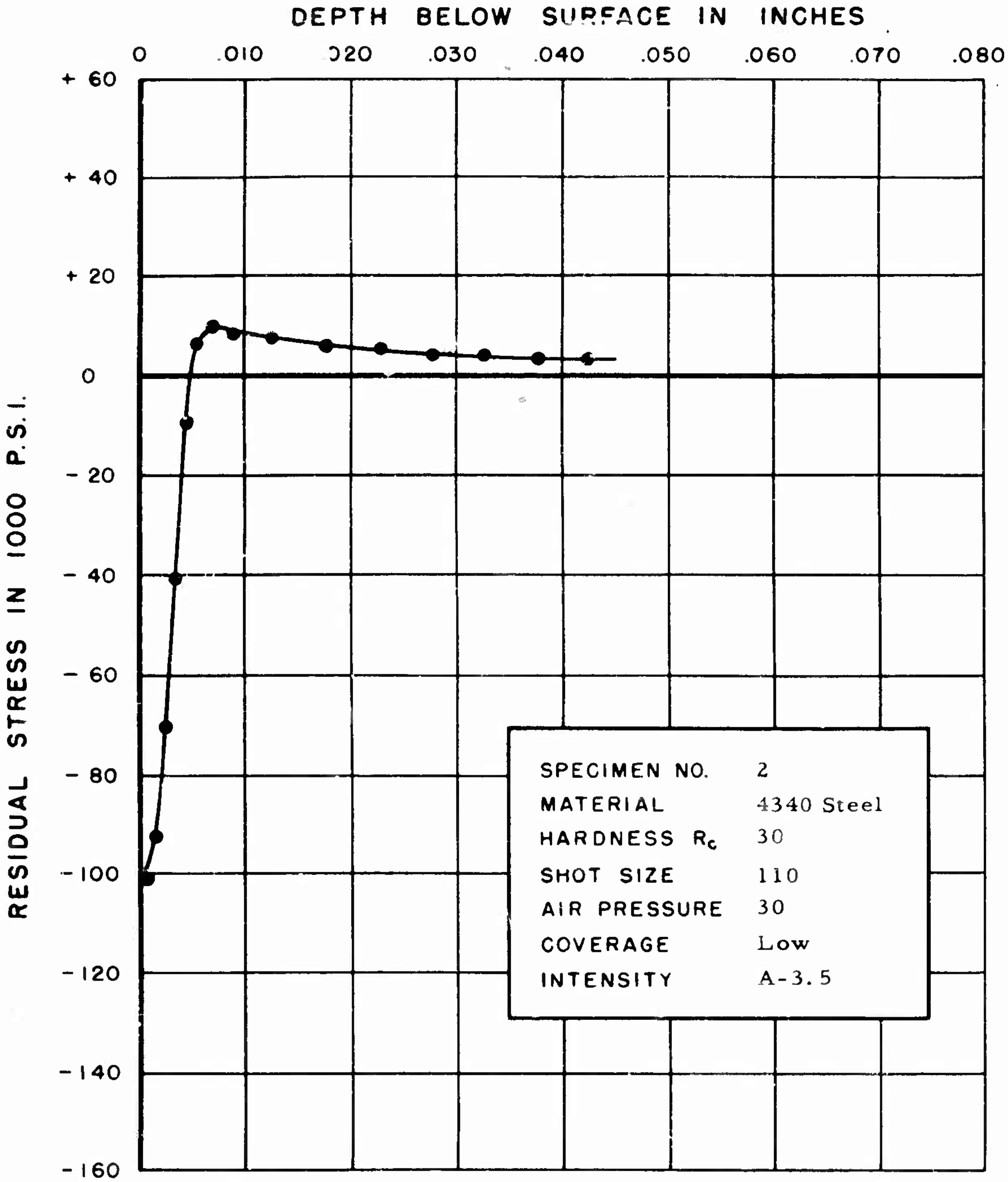


FIGURE 35. RESIDUAL STRESS DISTRIBUTION

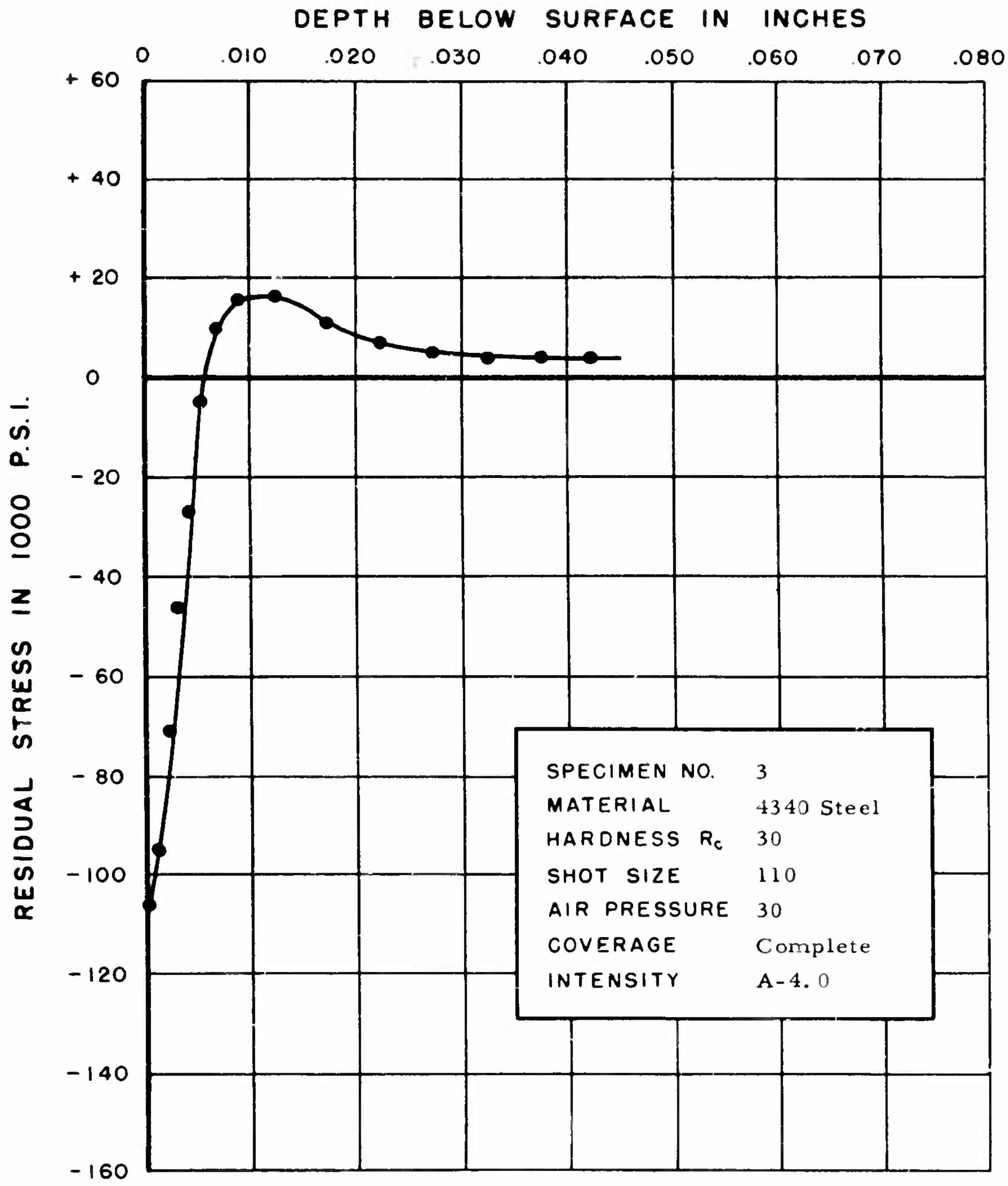


FIGURE 36. RESIDUAL STRESS DISTRIBUTION

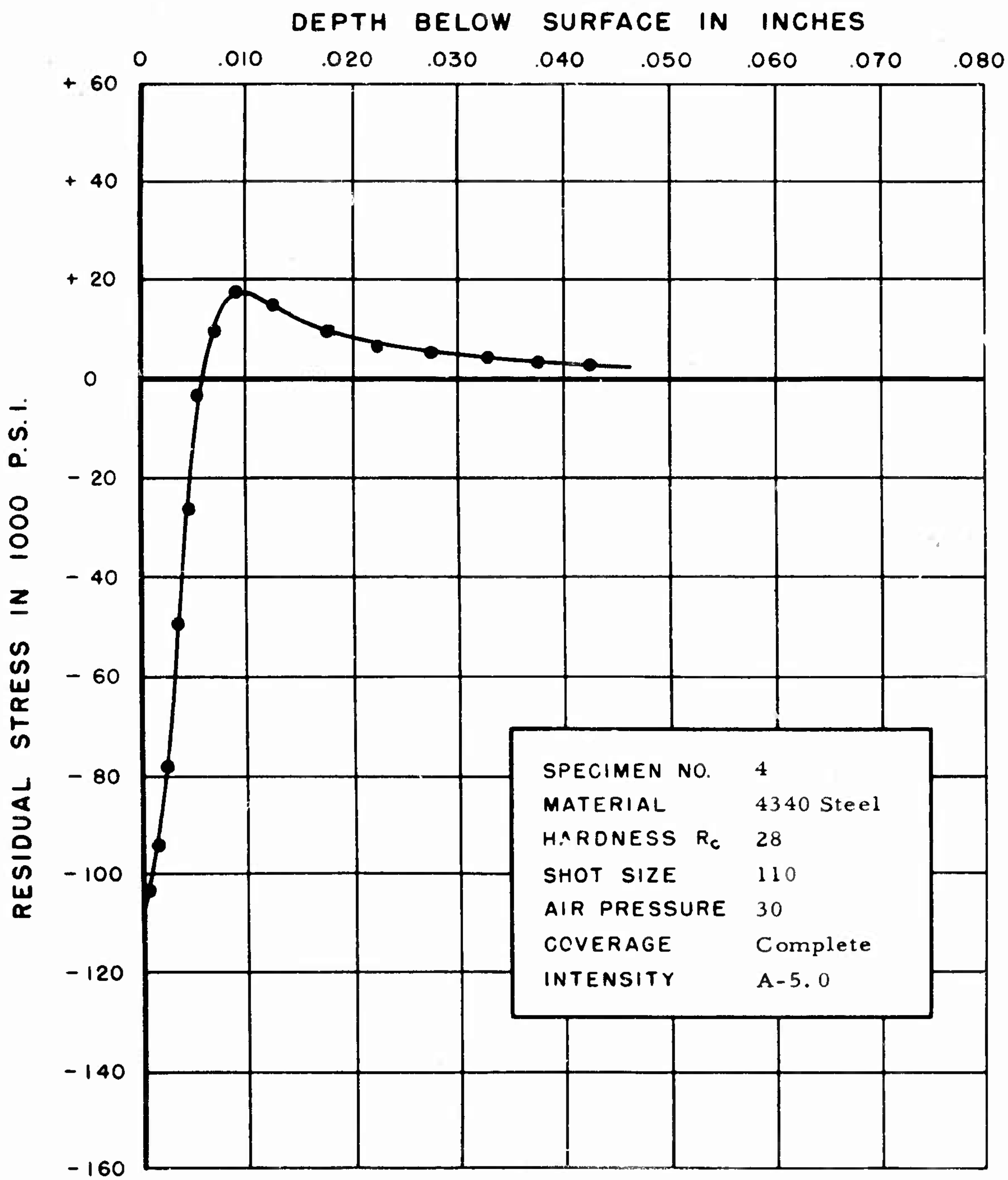


FIGURE 37. RESIDUAL STRESS DISTRIBUTION

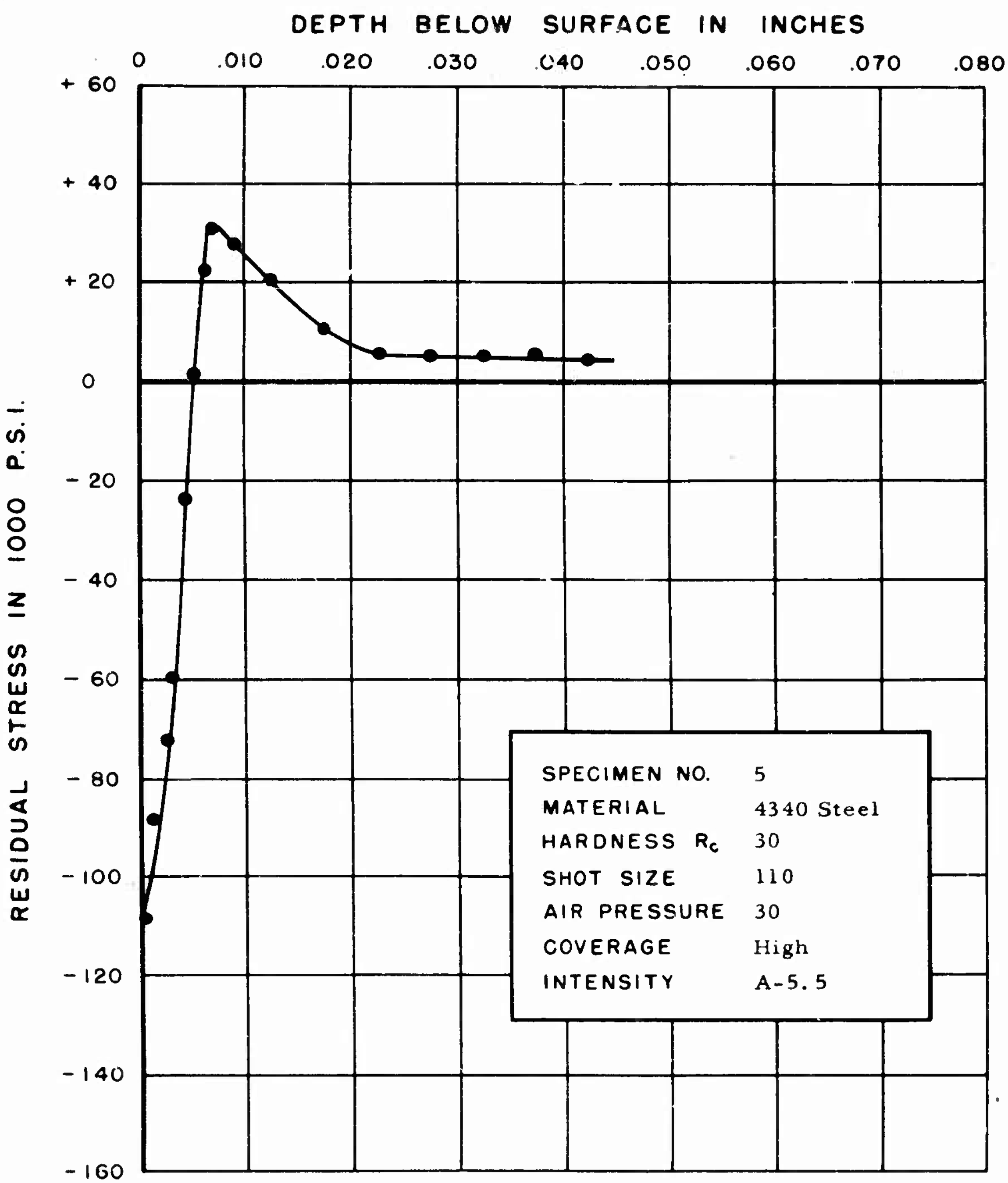


FIGURE 38. RESIDUAL STRESS DISTRIBUTION

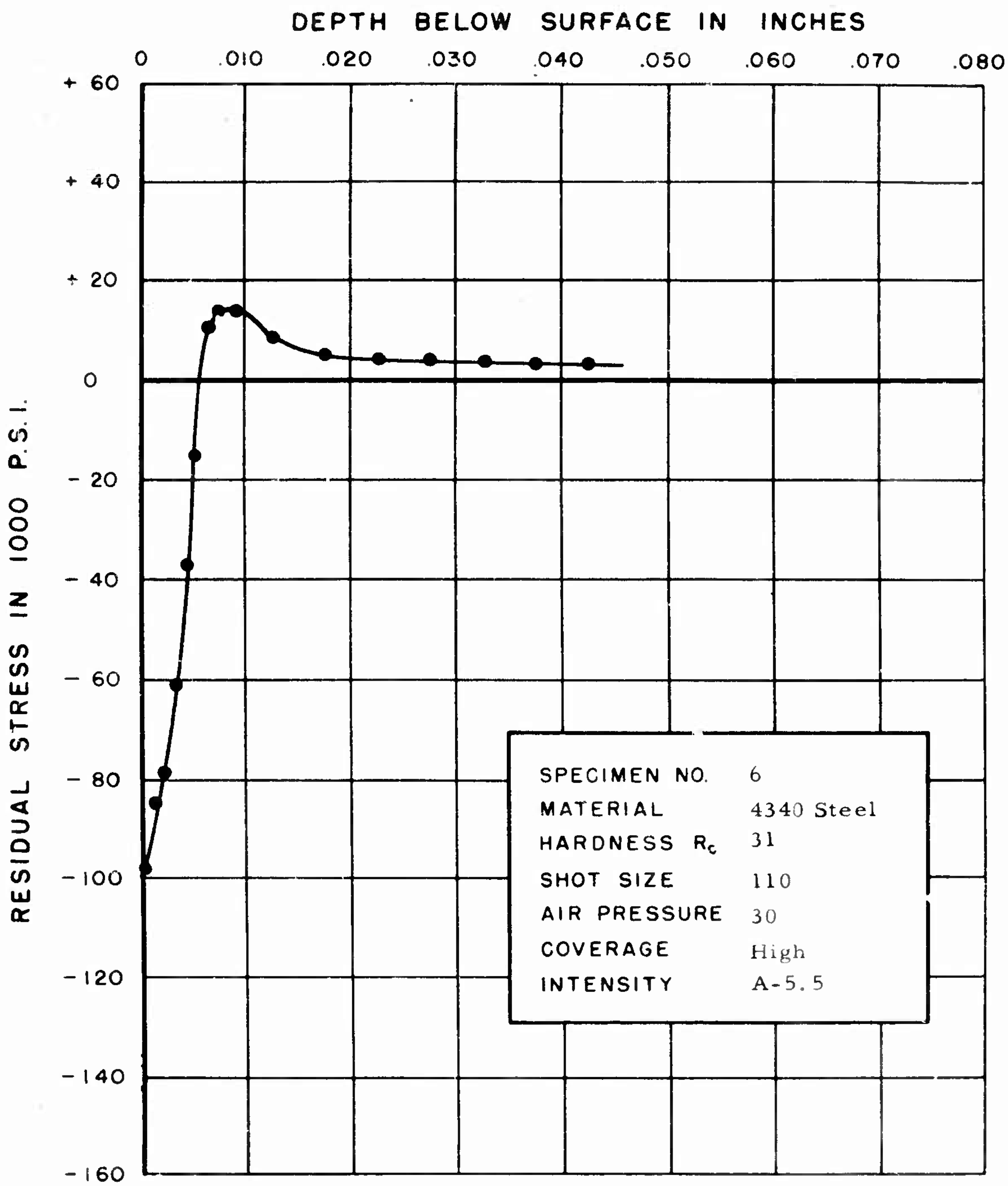


FIGURE 39. RESIDUAL STRESS DISTRIBUTION

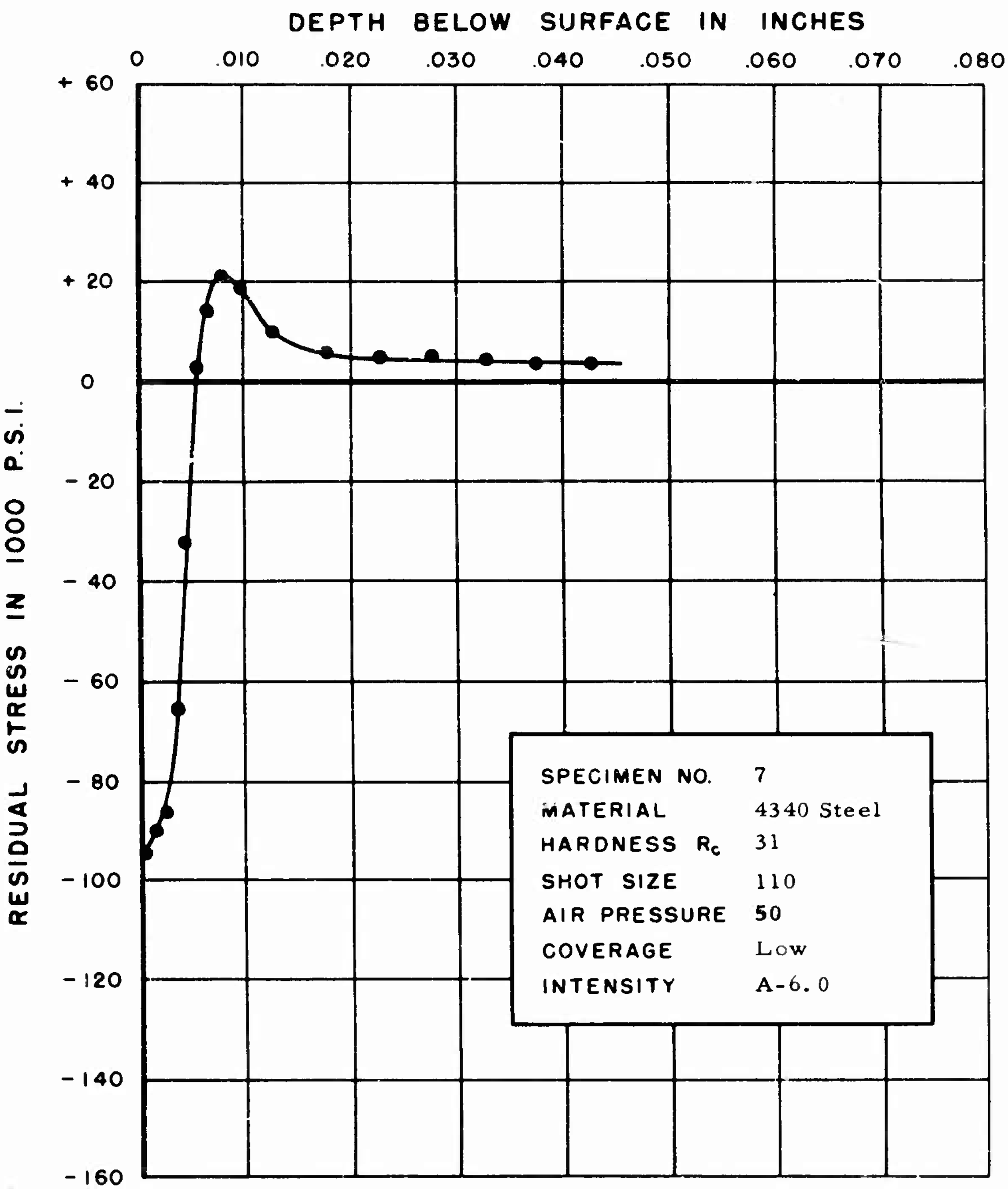


FIGURE 40. RESIDUAL STRESS DISTRIBUTION

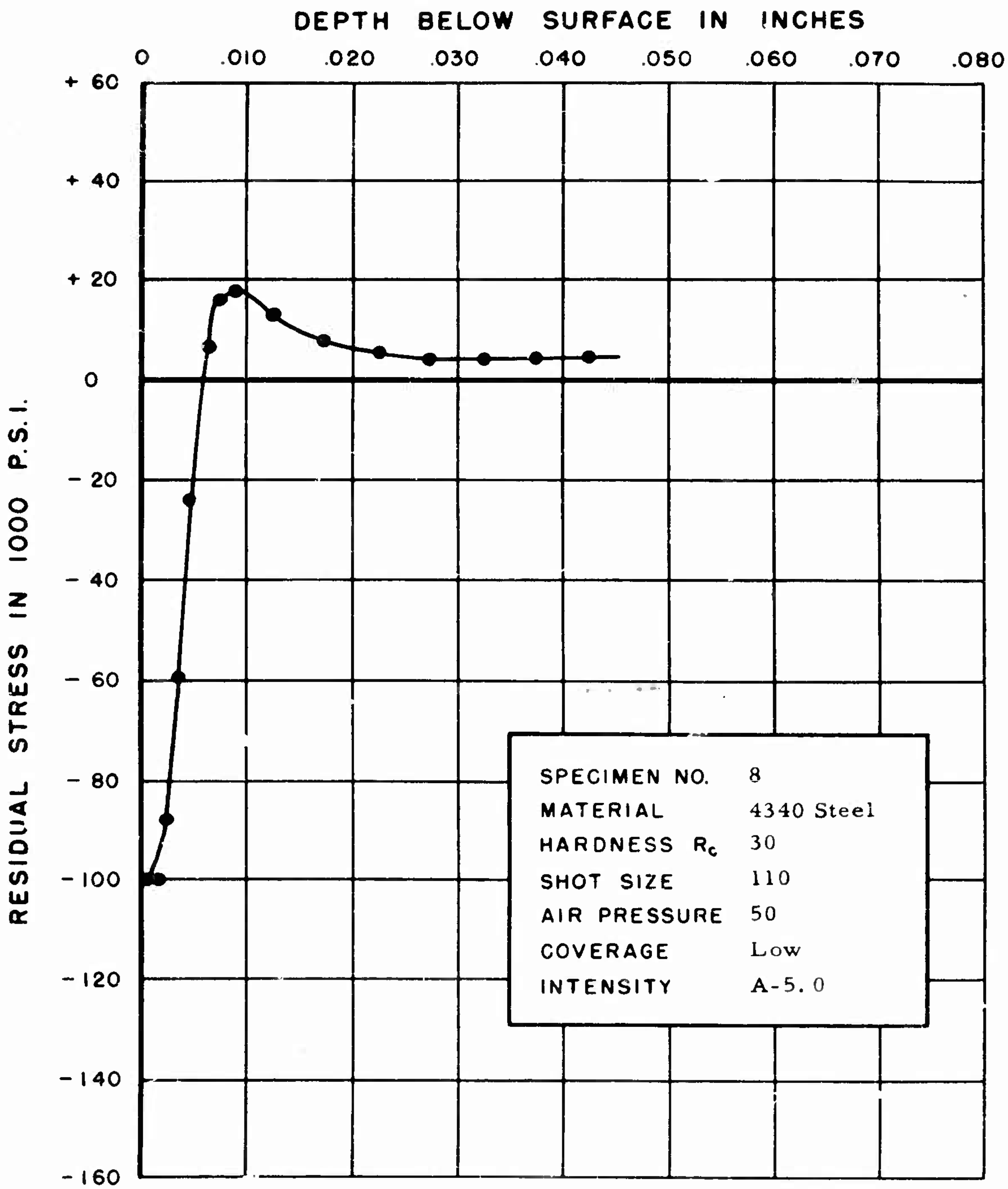


FIGURE 41. RESIDUAL STRESS DISTRIBUTION

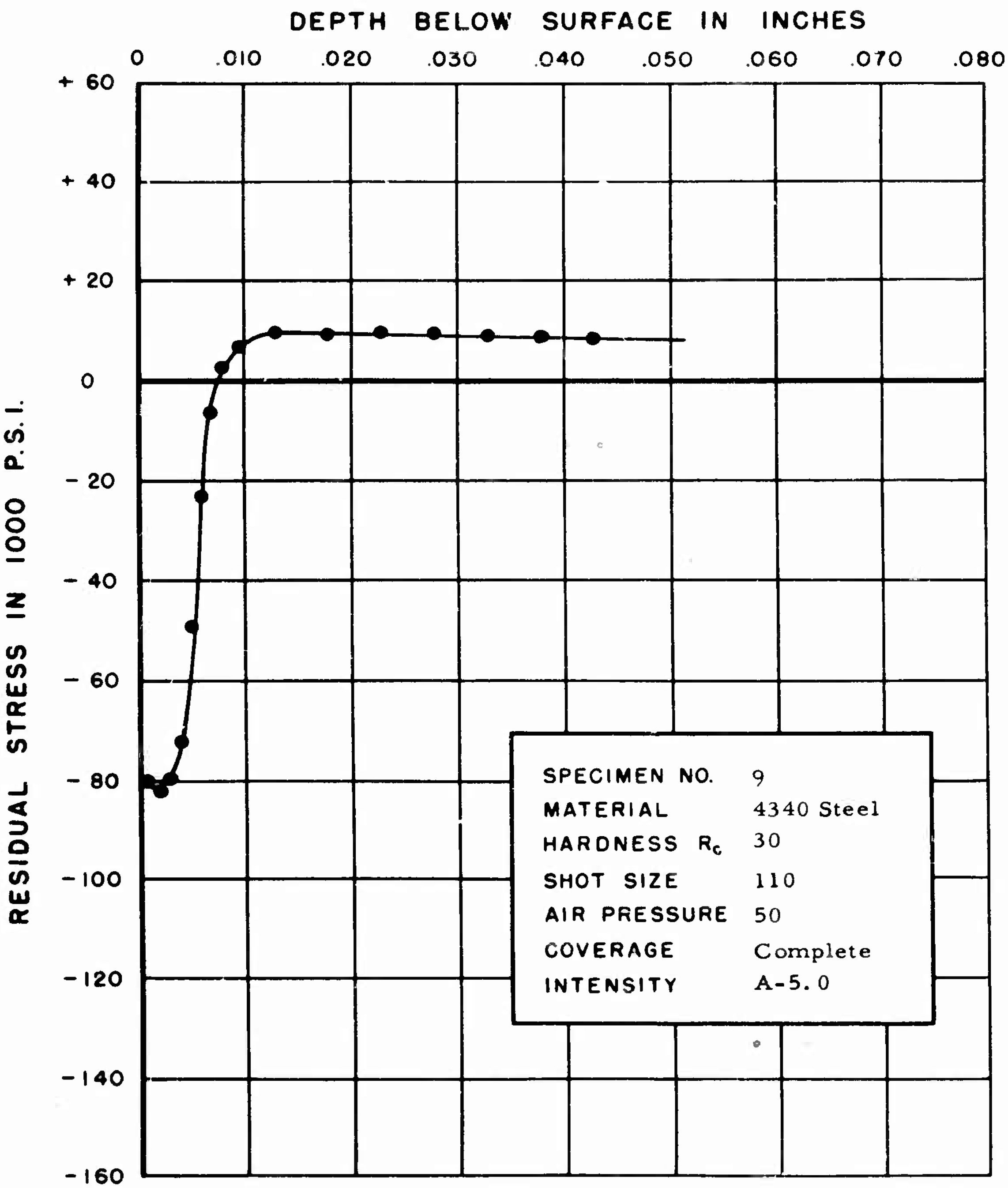


FIGURE 42. RESIDUAL STRESS DISTRIBUTION

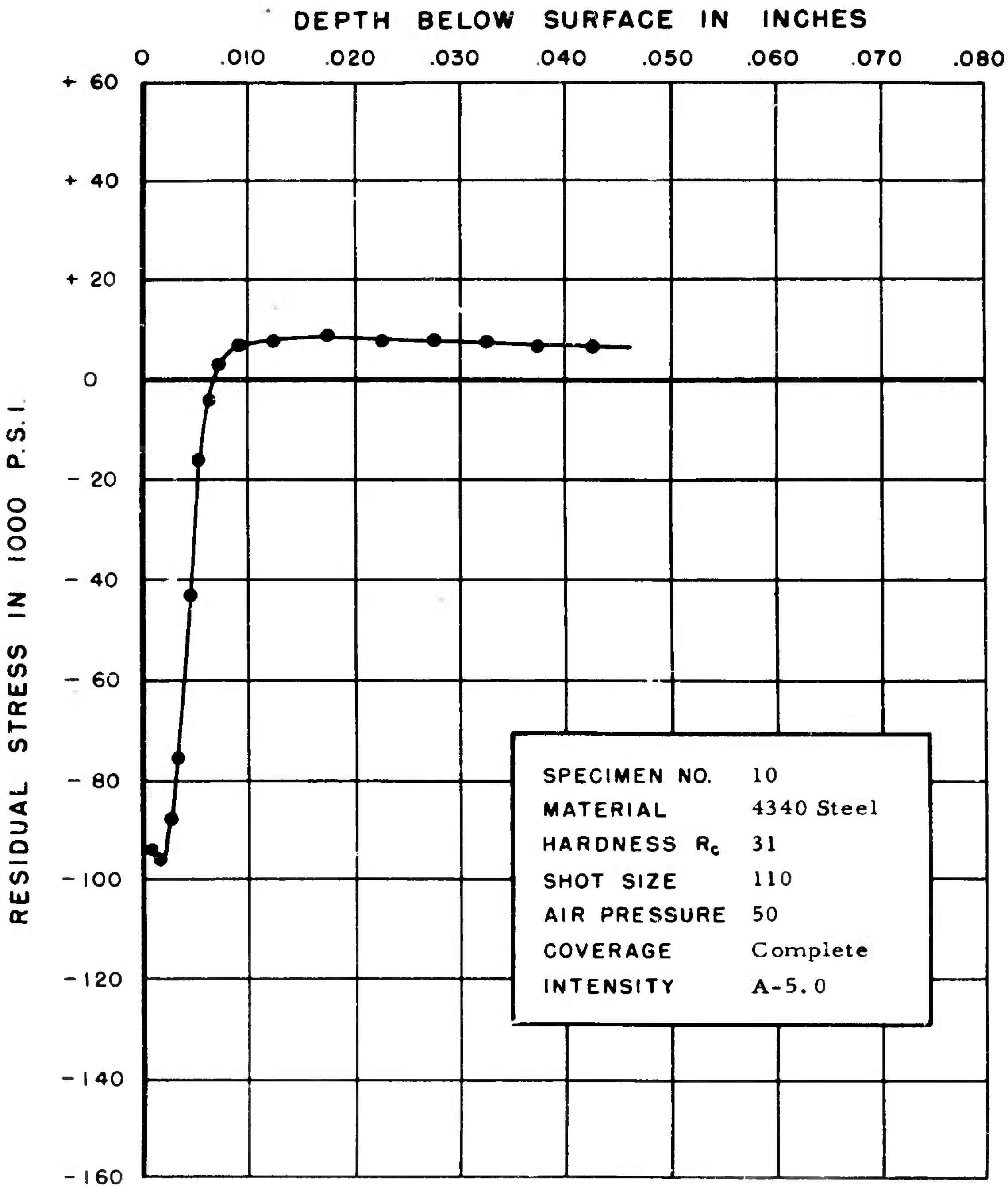


FIGURE 43. RESIDUAL STRESS DISTRIBUTION

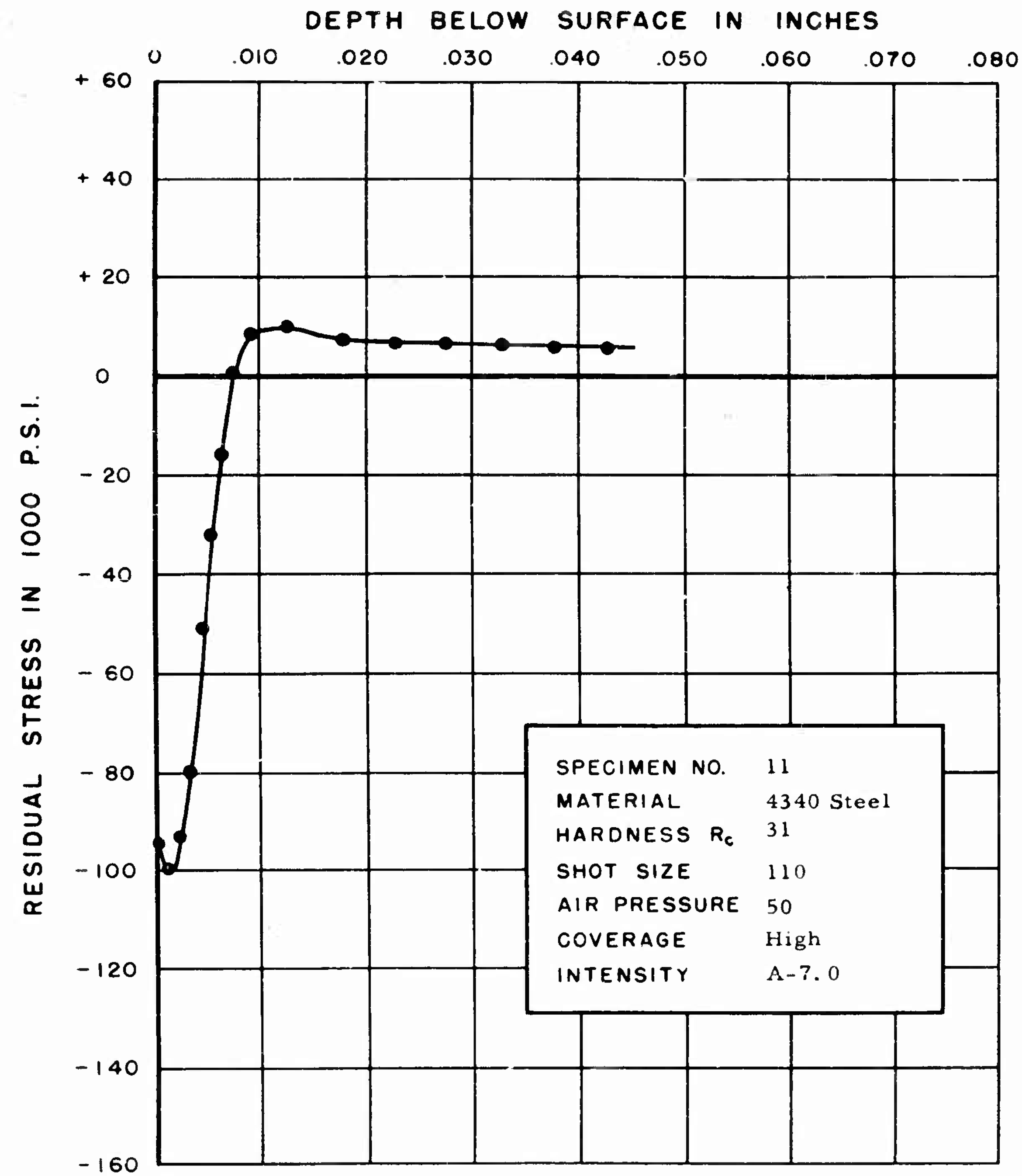


FIGURE 44. RESIDUAL STRESS DISTRIBUTION

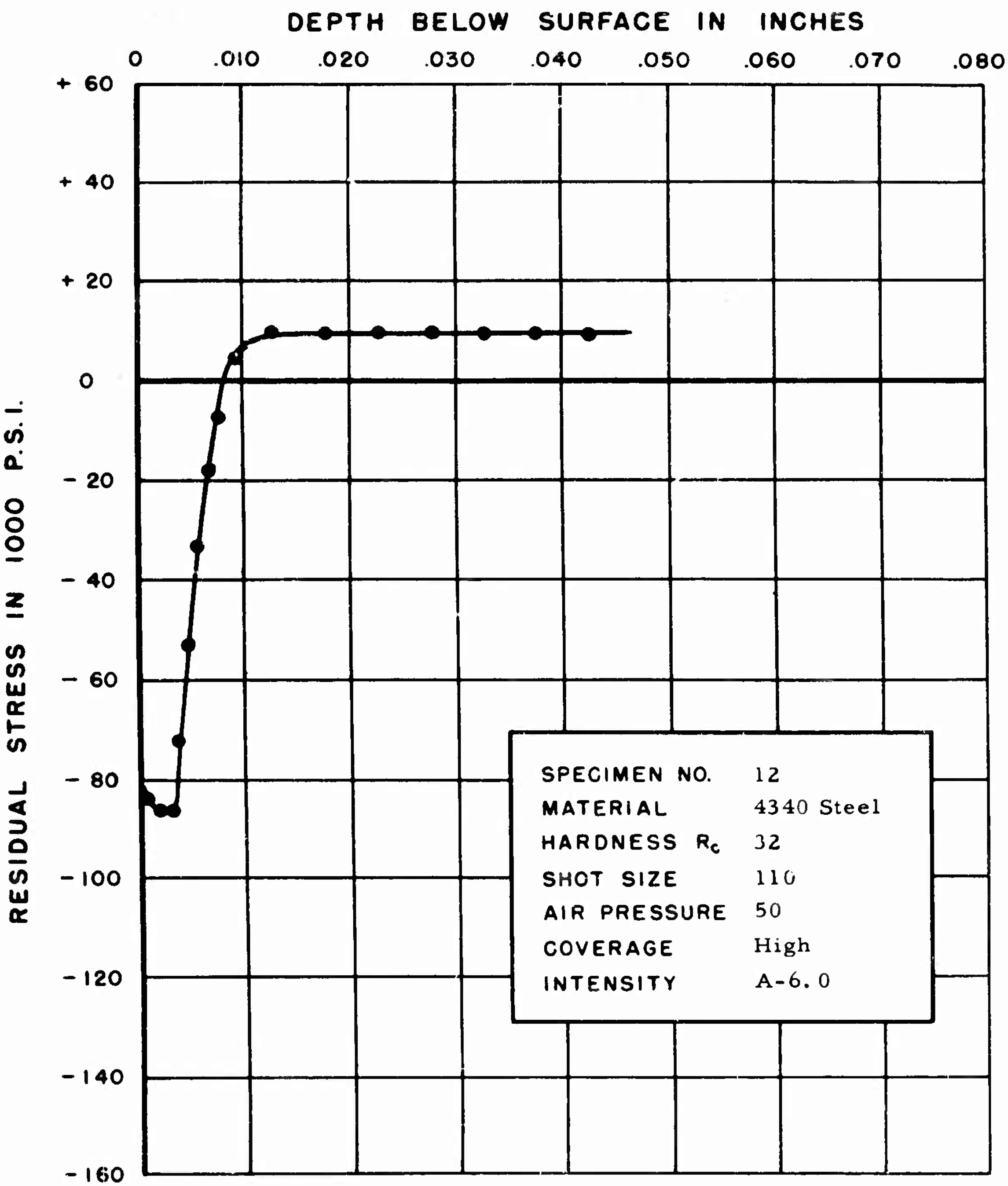


FIGURE 45. RESIDUAL STRESS DISTRIBUTION

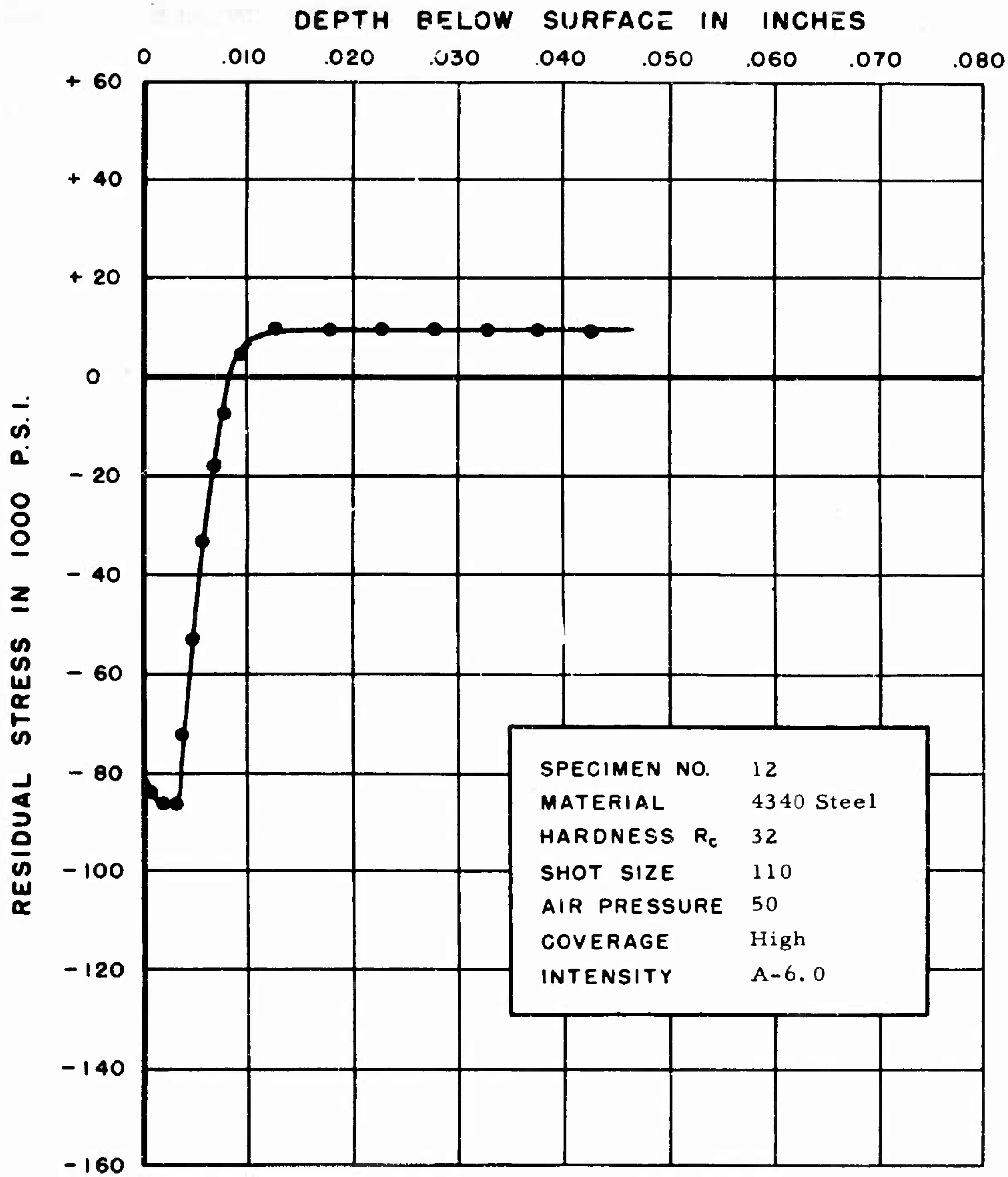


FIGURE 45. RESIDUAL STRESS DISTRIBUTION

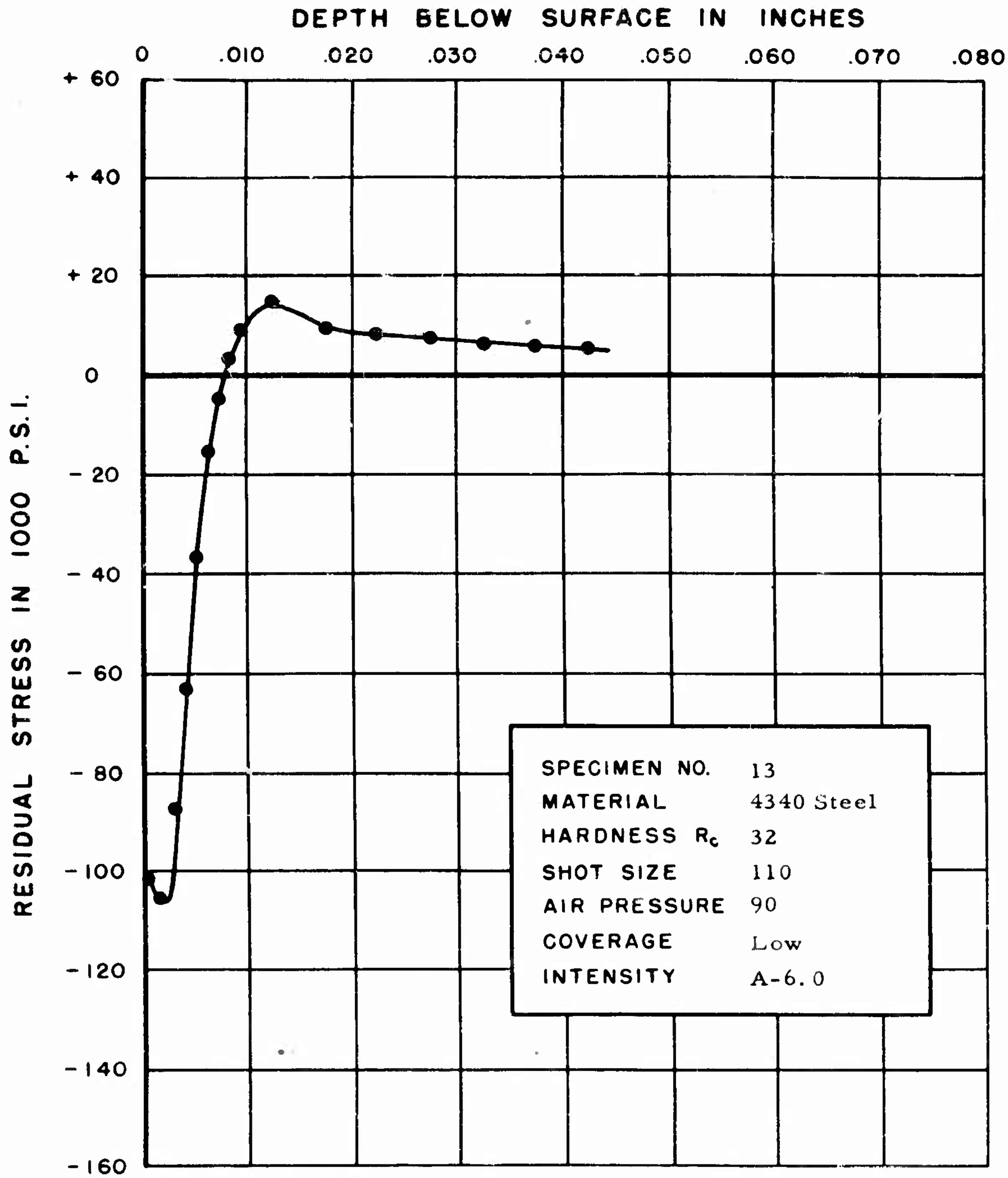


FIGURE 46. RESIDUAL STRESS DISTRIBUTION

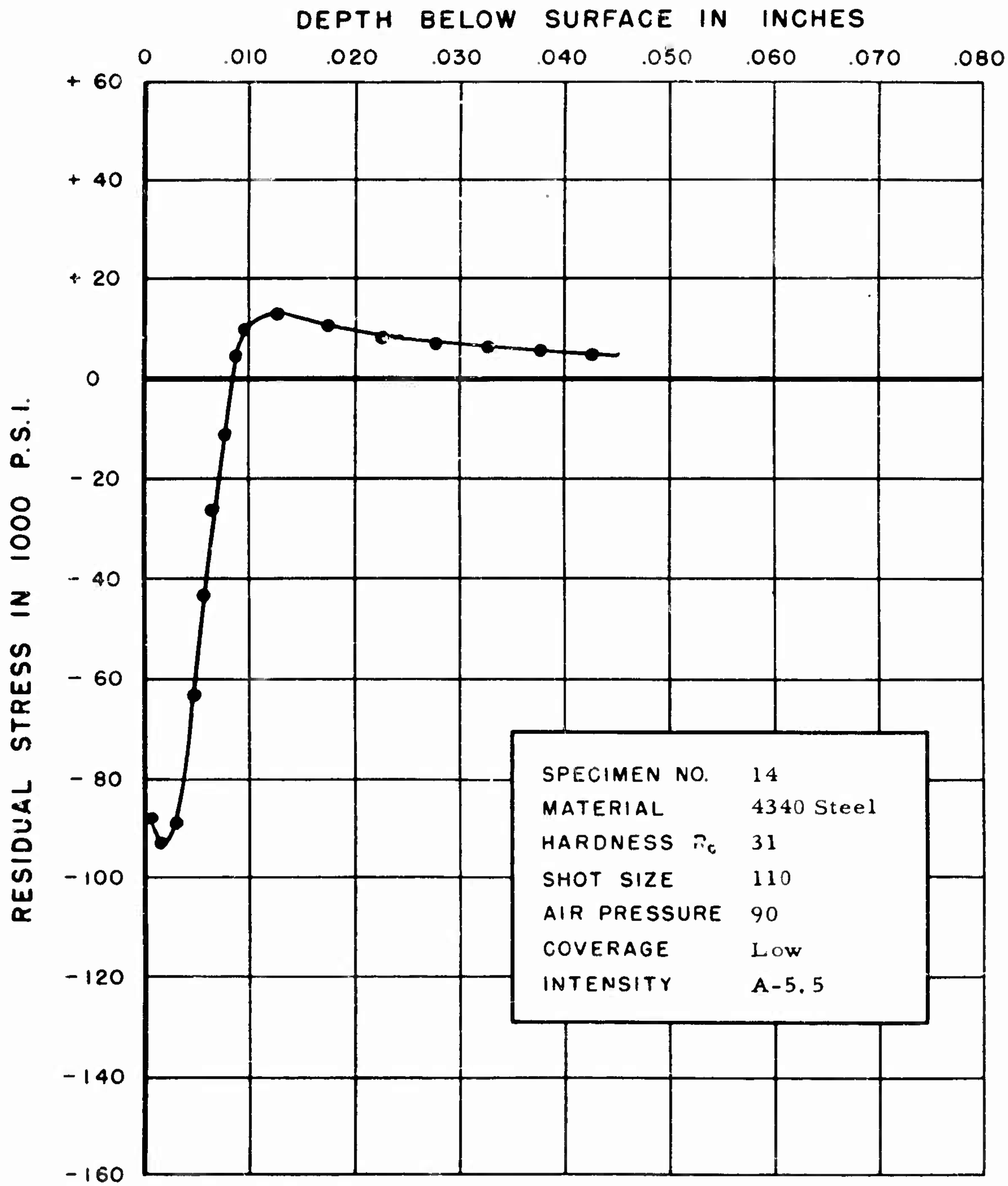


FIGURE 47. RESIDUAL STRESS DISTRIBUTION

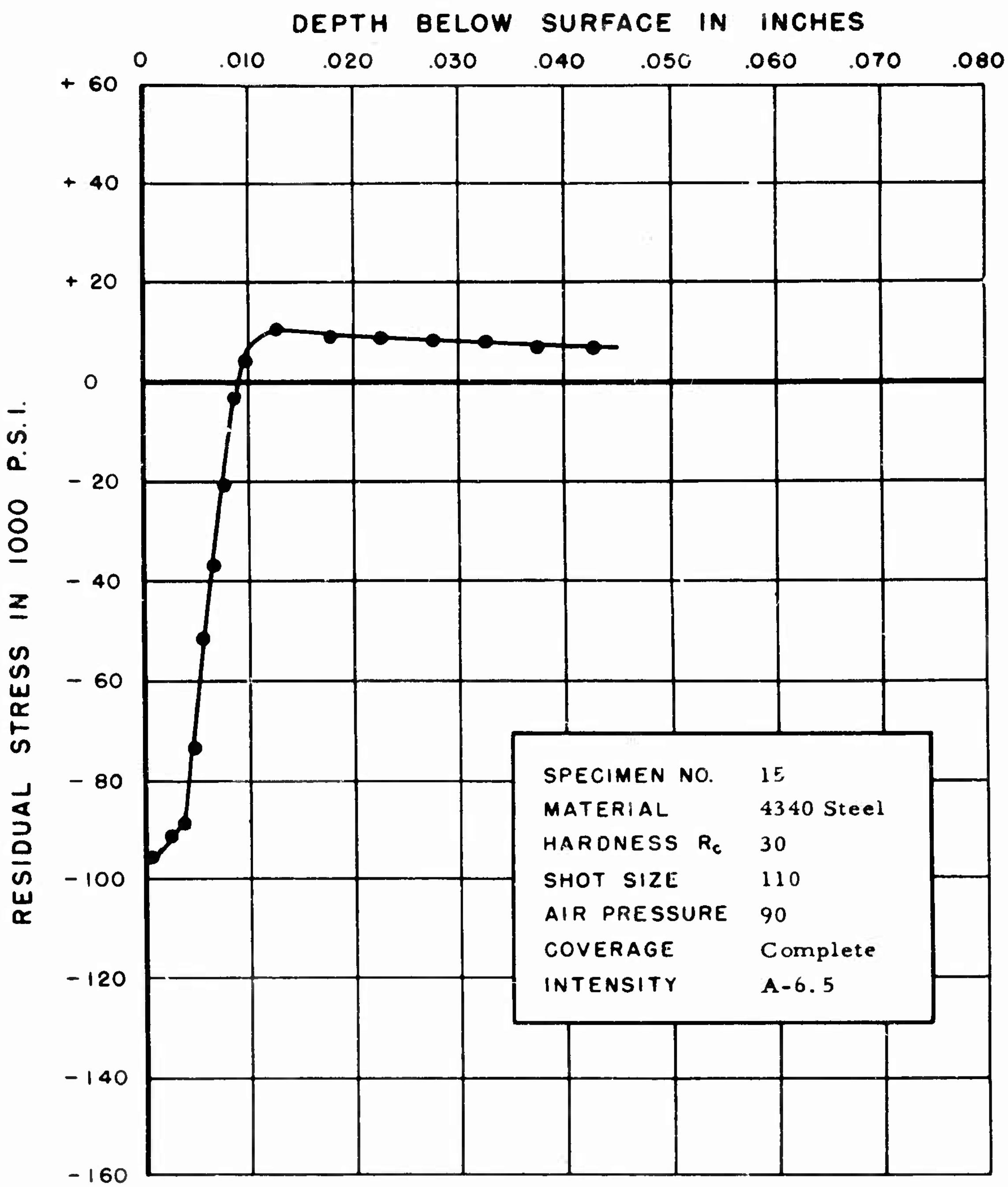


FIGURE 48. RESIDUAL STRESS DISTRIBUTION

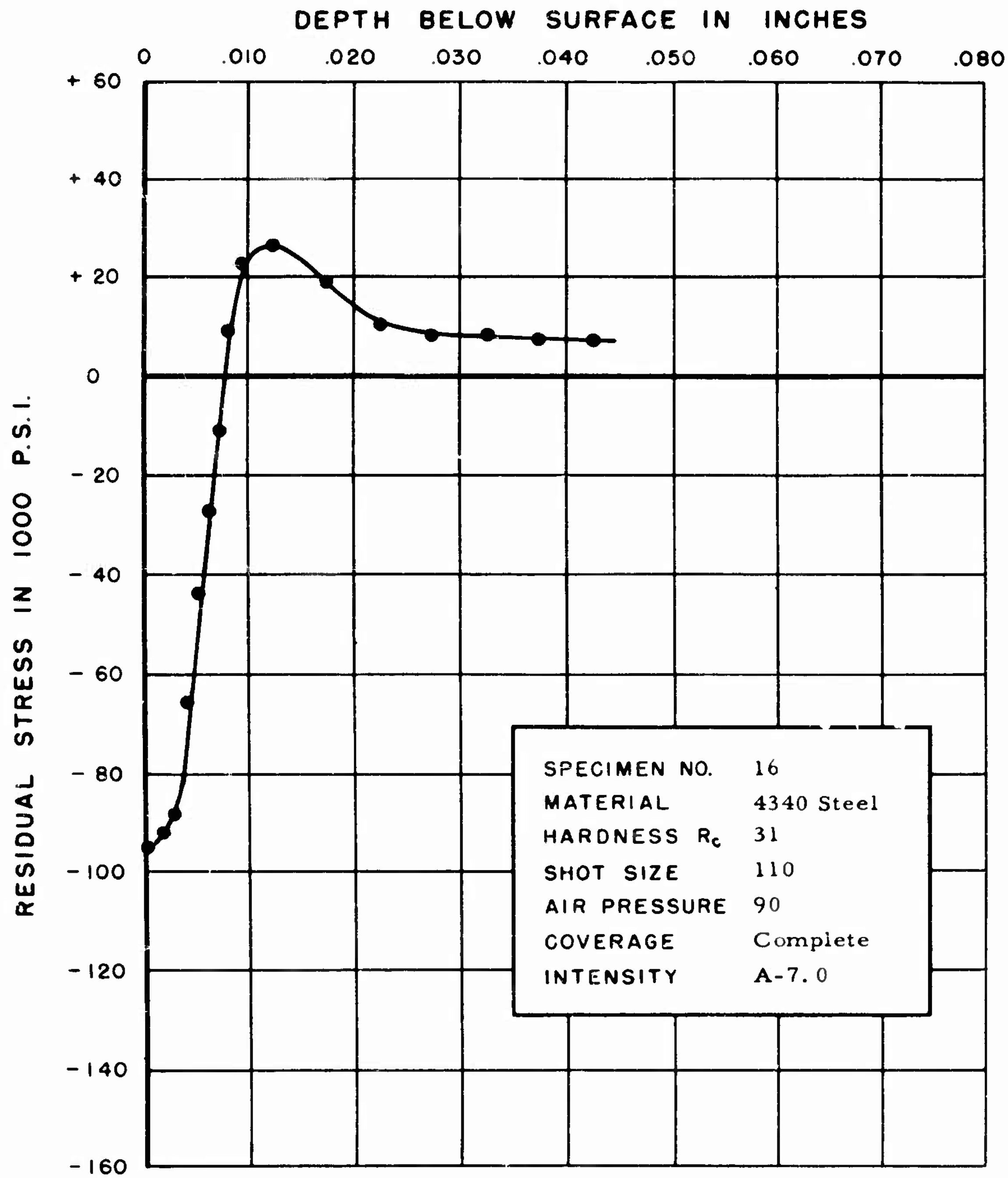


FIGURE 49. RESIDUAL STRESS DISTRIBUTION

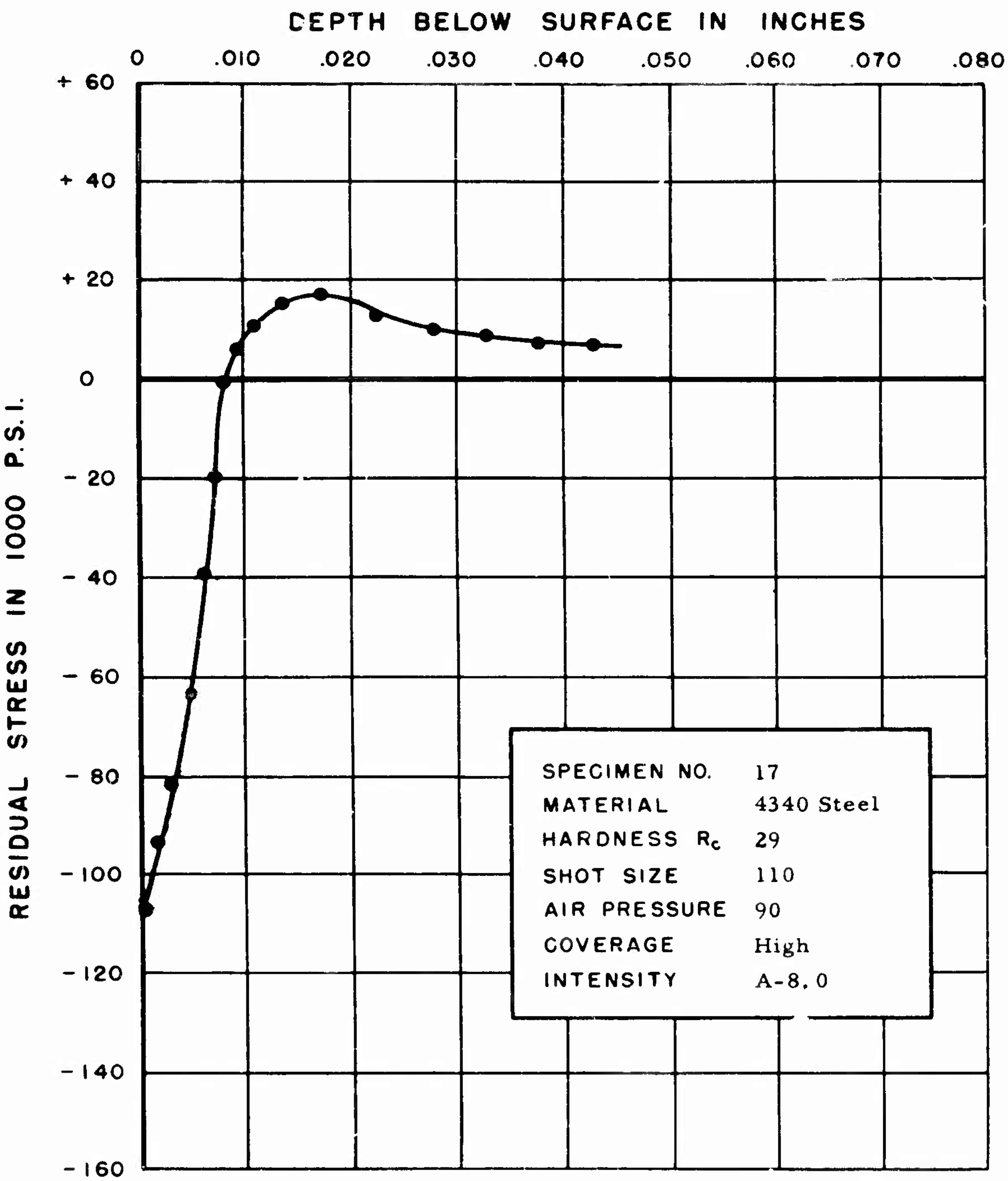


FIGURE 50. RESIDUAL STRESS DISTRIBUTION

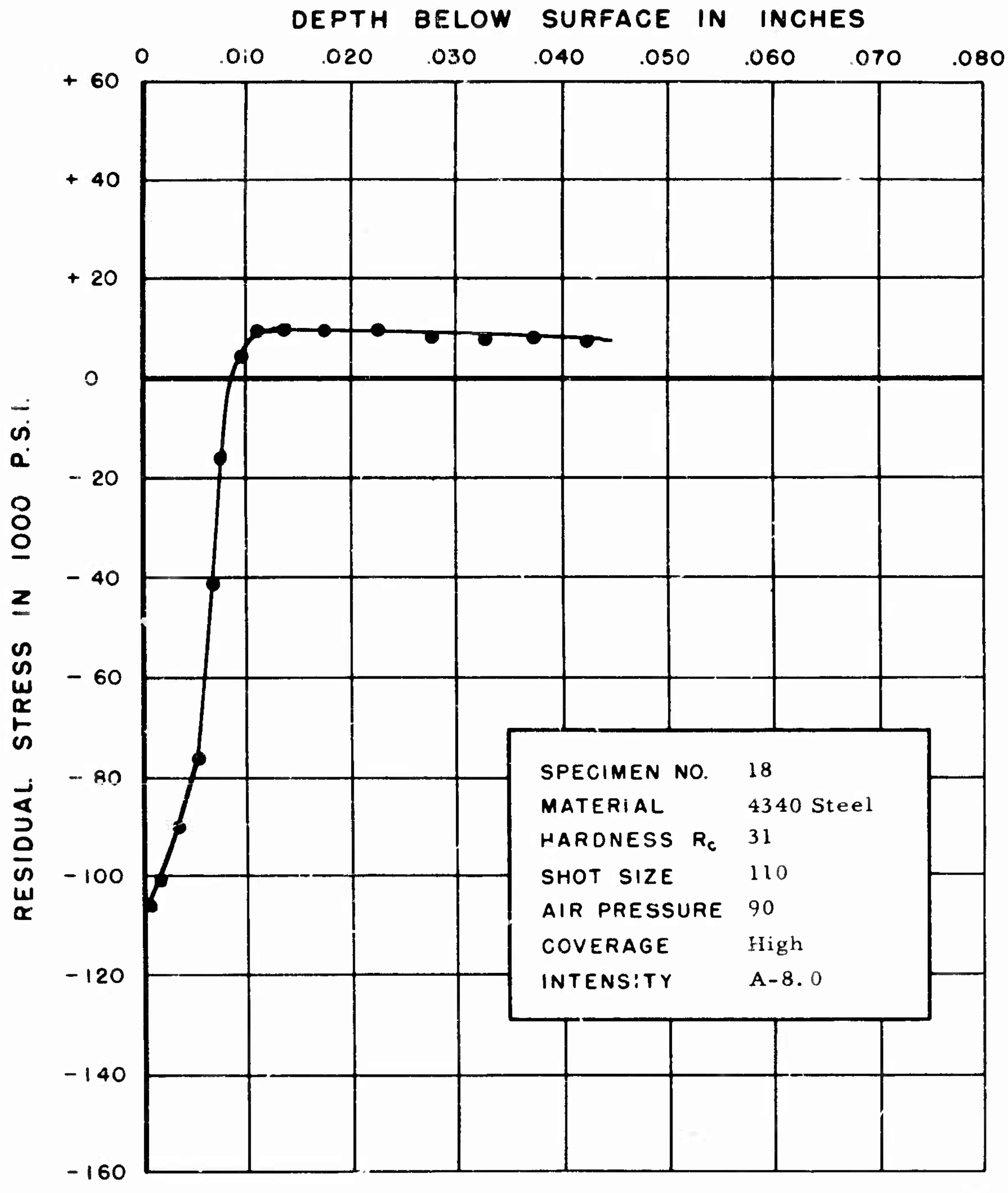


FIGURE 51. RESIDUAL STRESS DISTRIBUTION

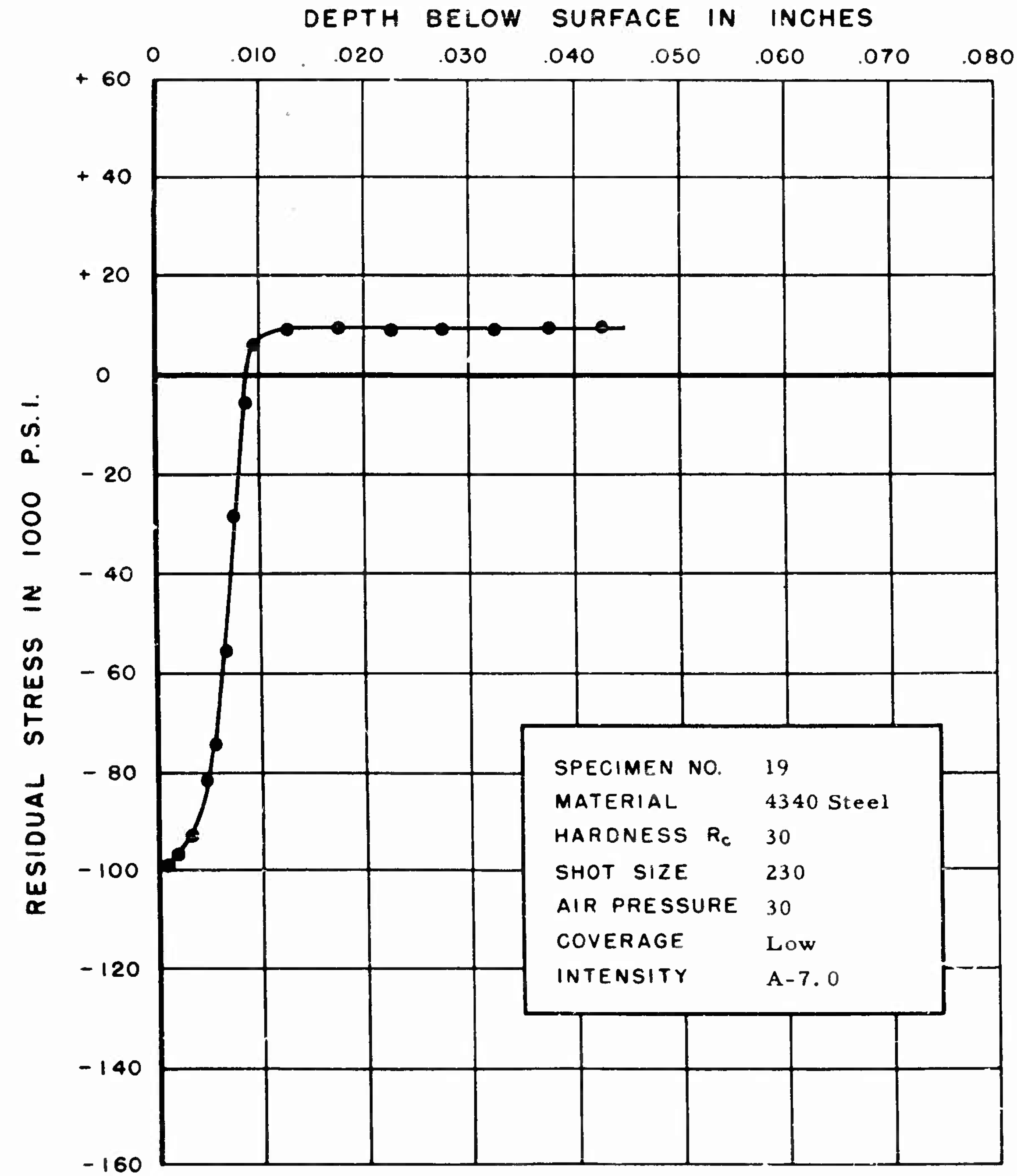


FIGURE 52. RESIDUAL STRESS DISTRIBUTION

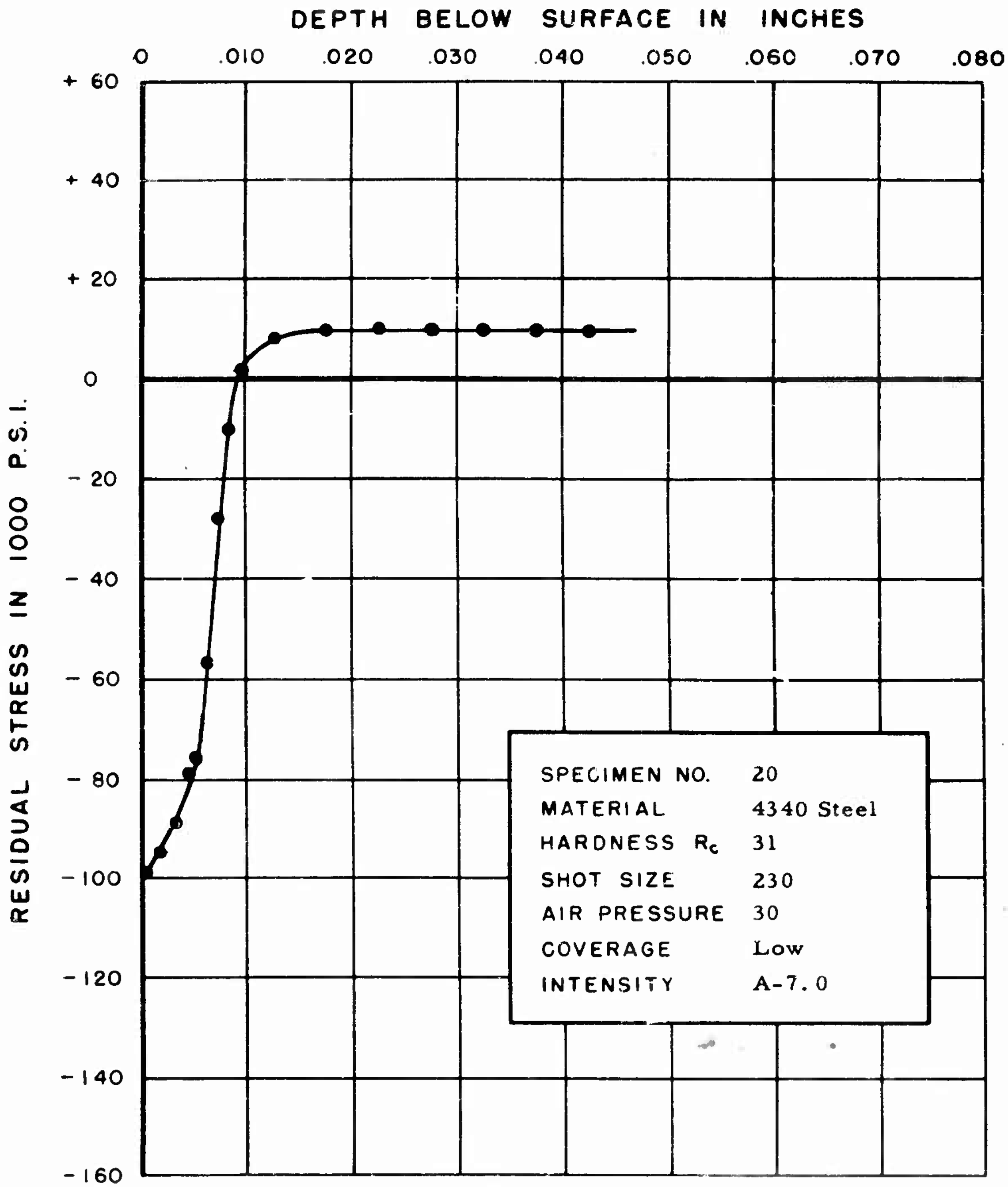


FIGURE 53. RESIDUAL STRESS DISTRIBUTION

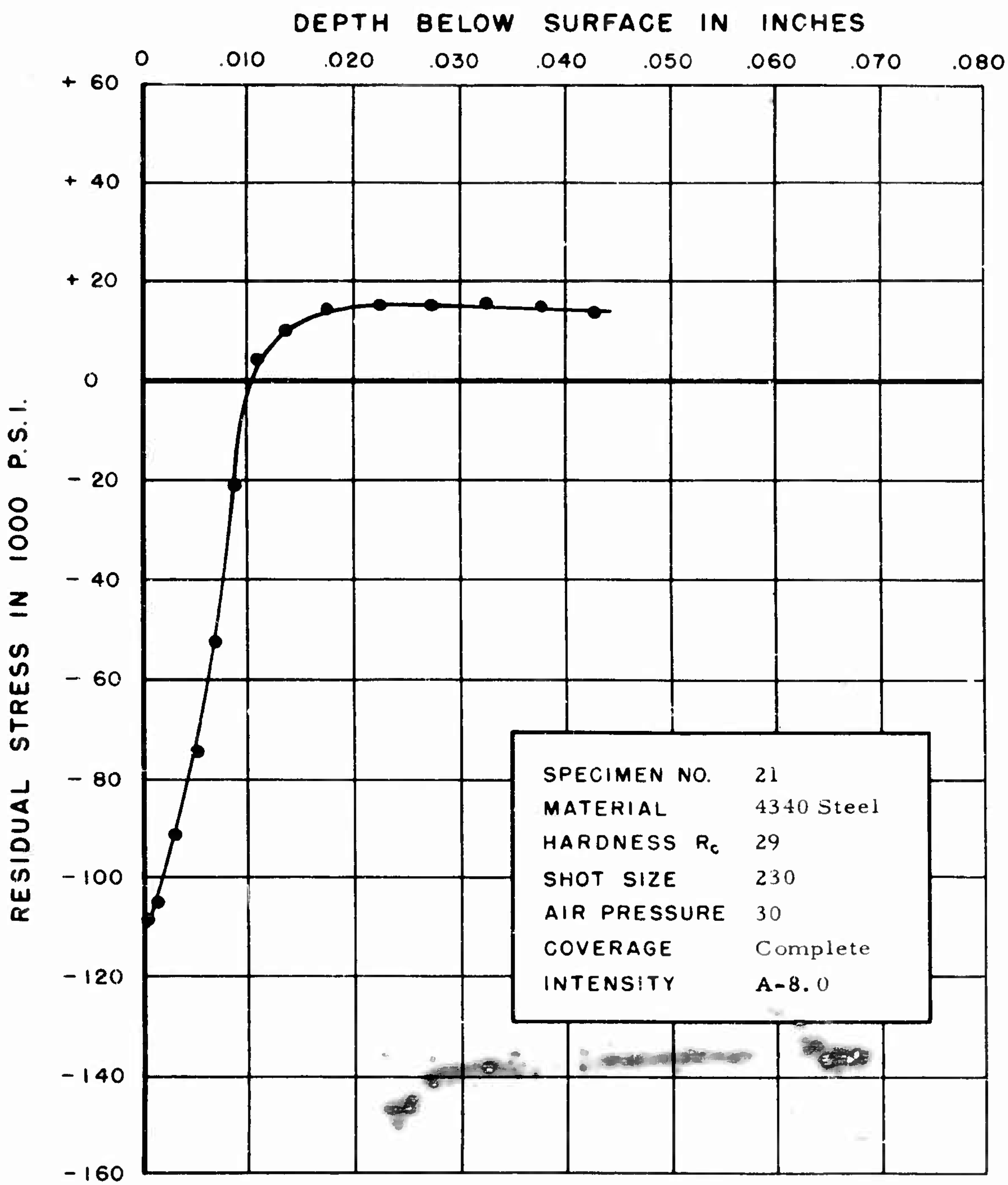


FIGURE 54. RESIDUAL STRESS DISTRIBUTION

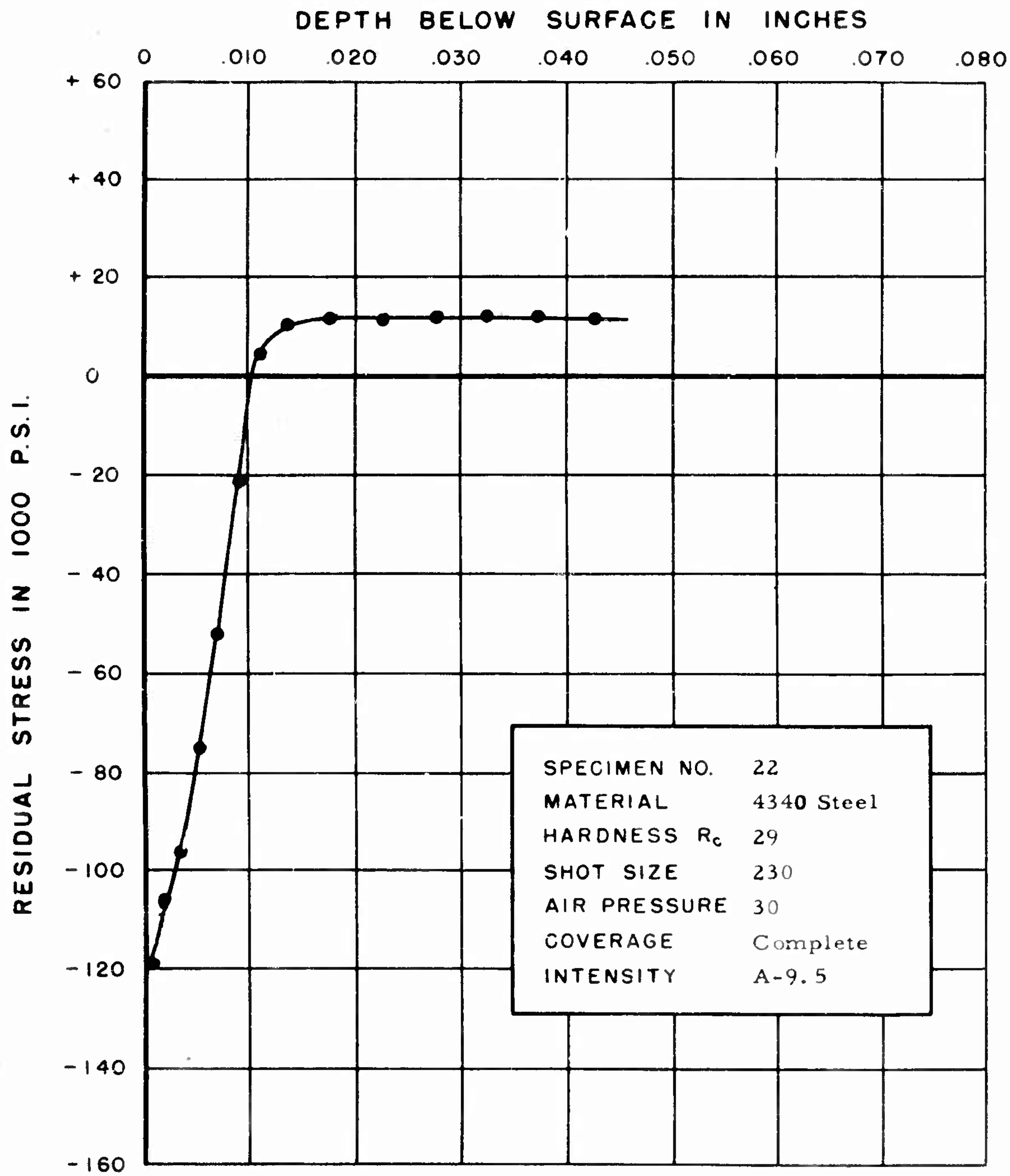


FIGURE 55. RESIDUAL STRESS DISTRIBUTION

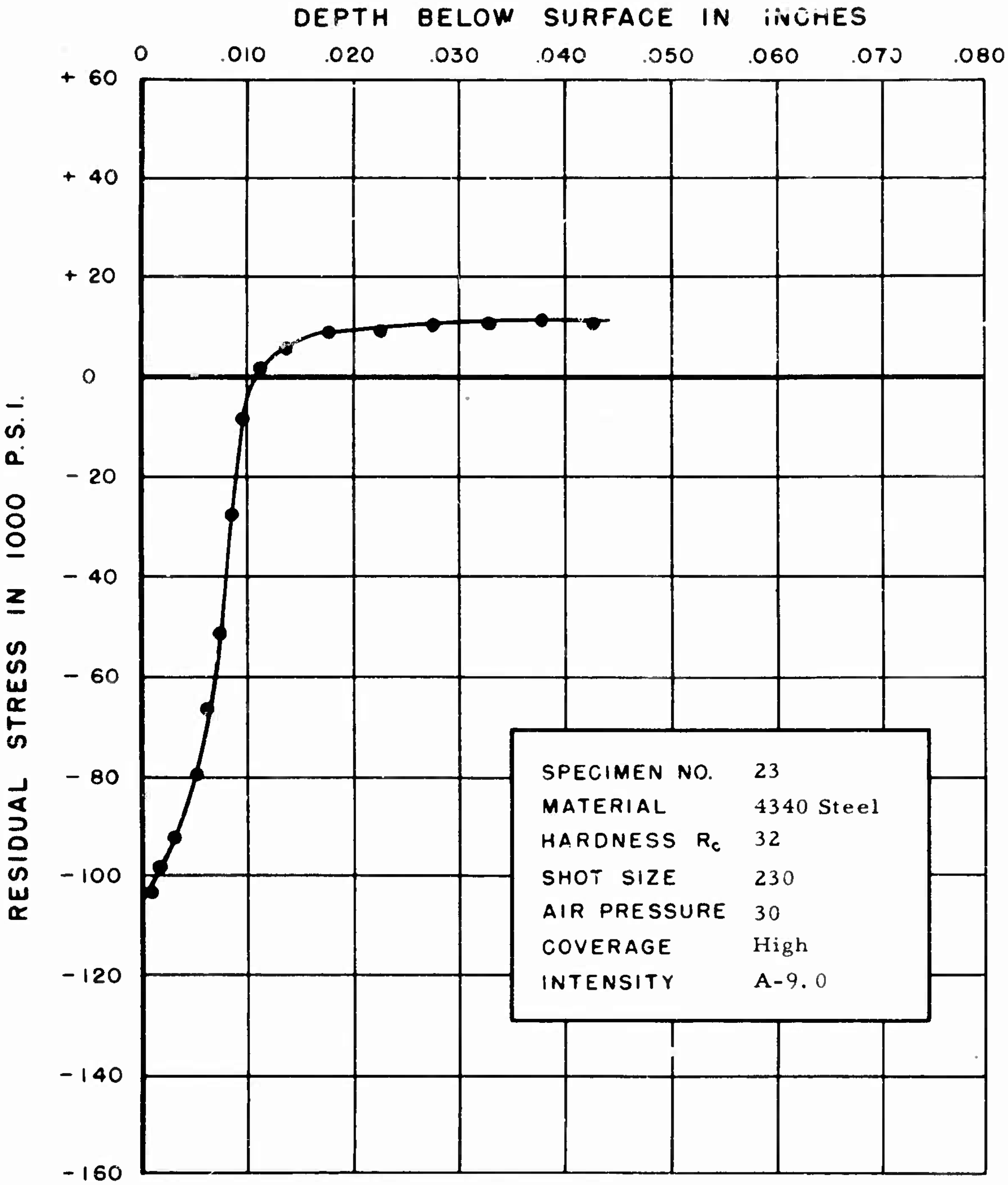


FIGURE 56. RESIDUAL STRESS DISTRIBUTION

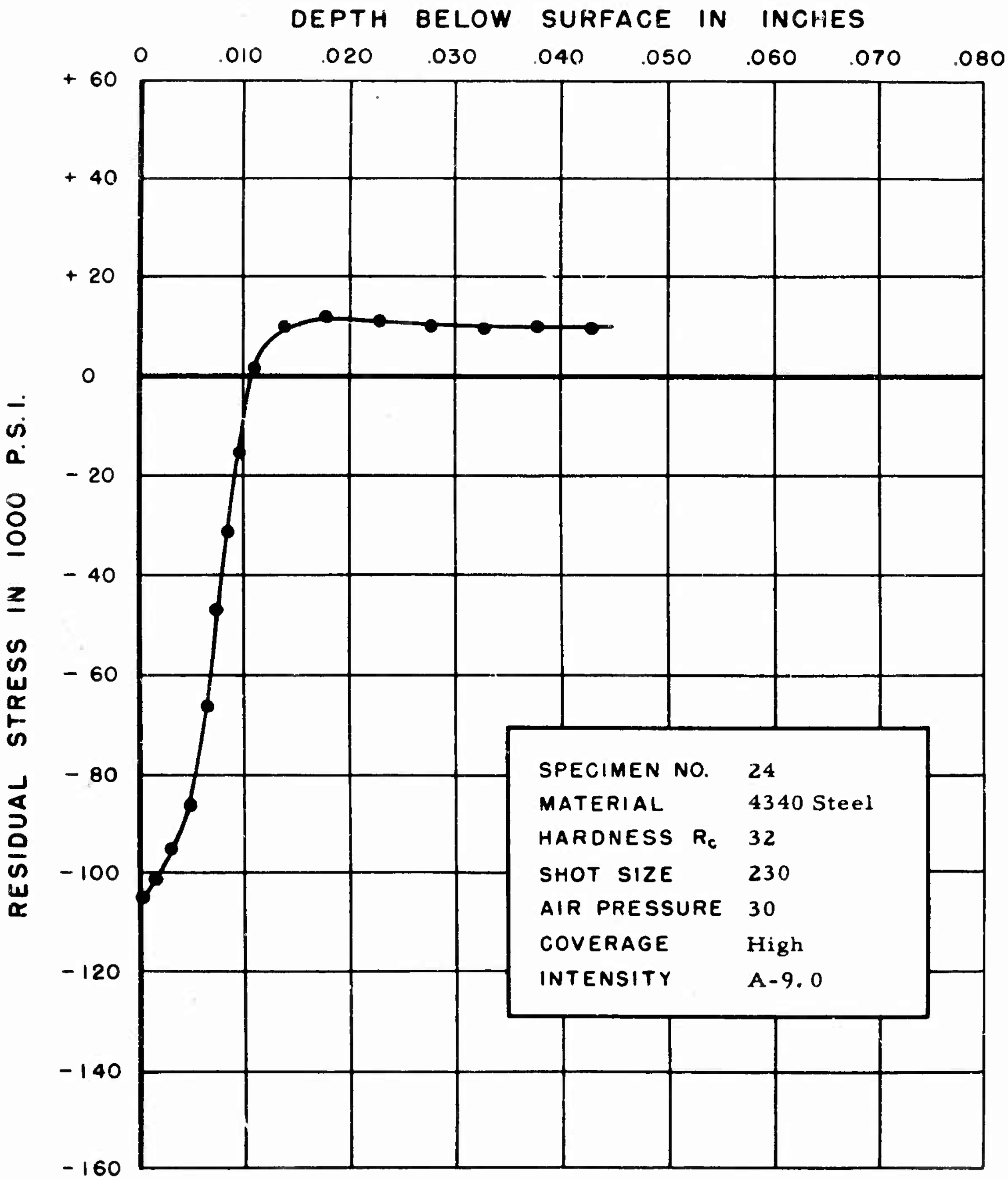


FIGURE 57. RESIDUAL STRESS DISTRIBUTION

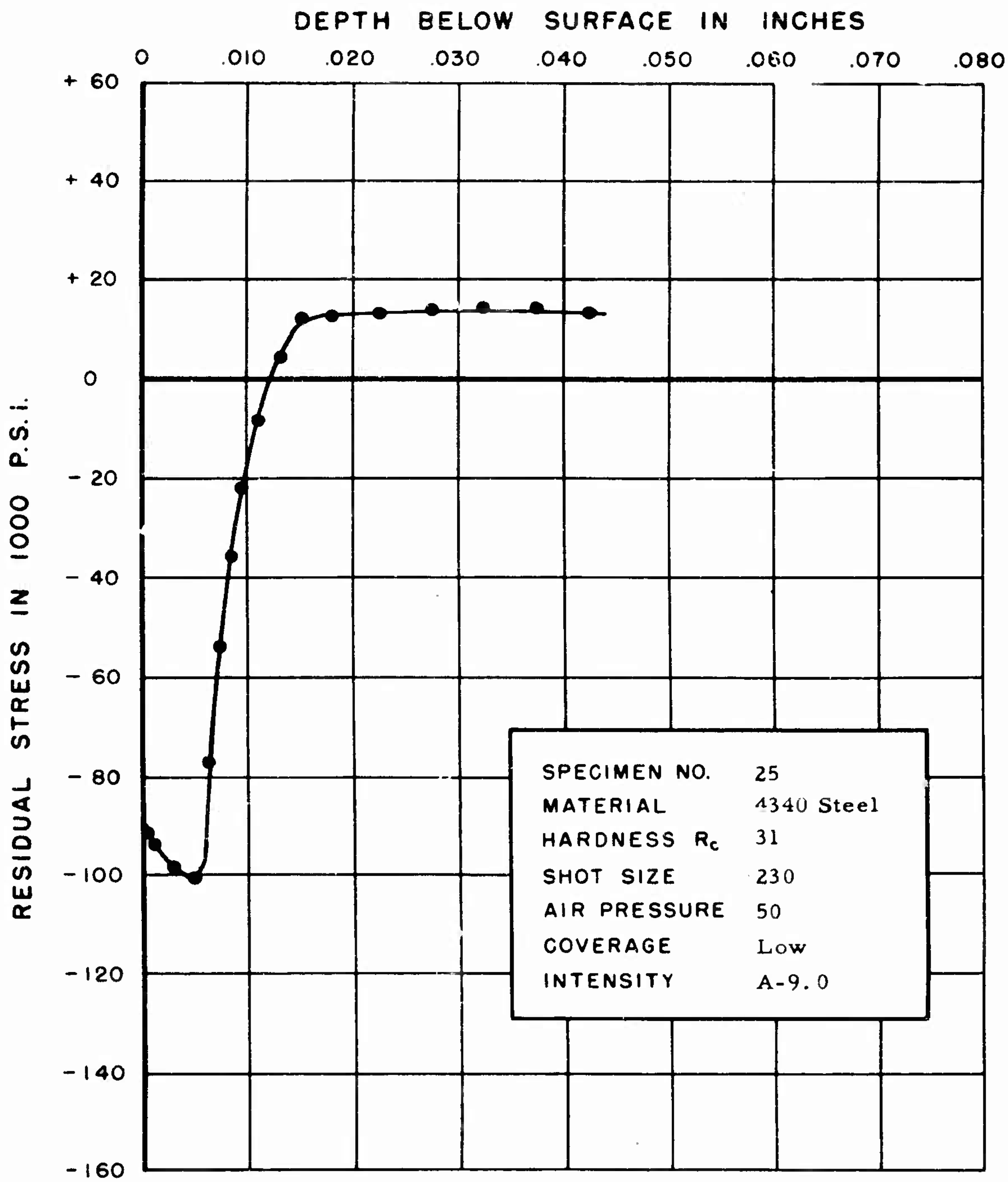


FIGURE 58. RESIDUAL STRESS DISTRIBUTION

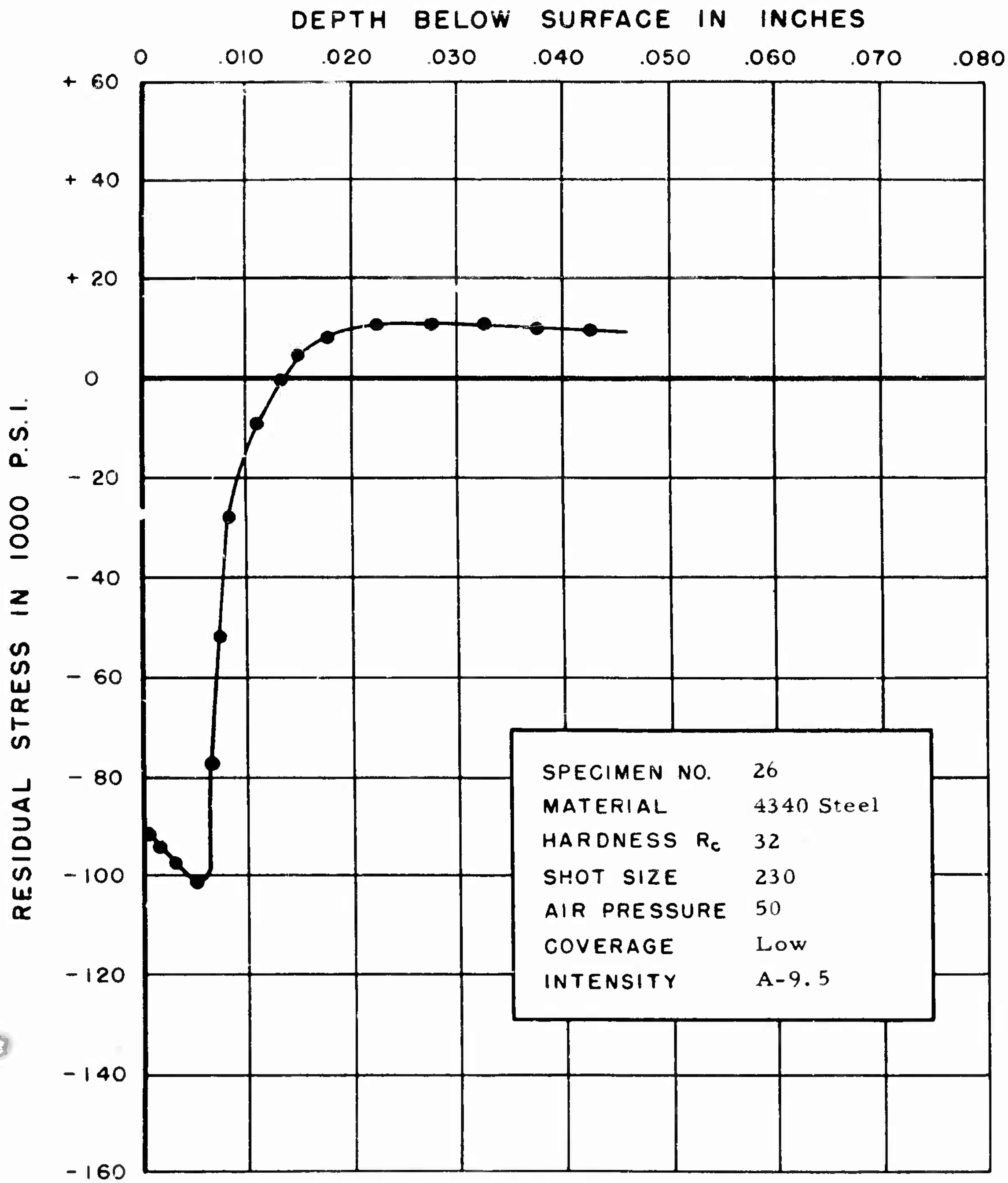


FIGURE 59. RESIDUAL STRESS DISTRIBUTION

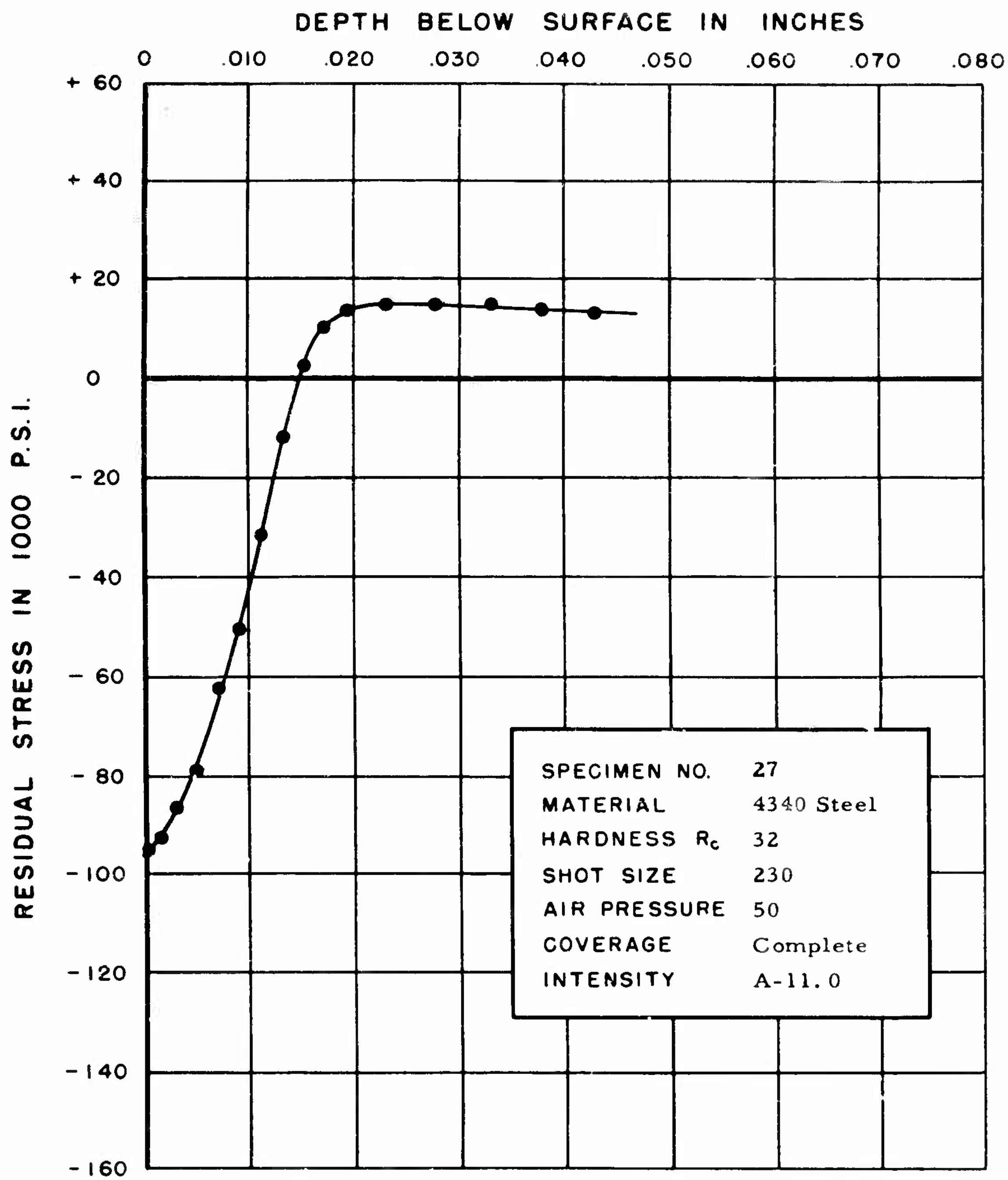


FIGURE 60. RESIDUAL STRESS DISTRIBUTION

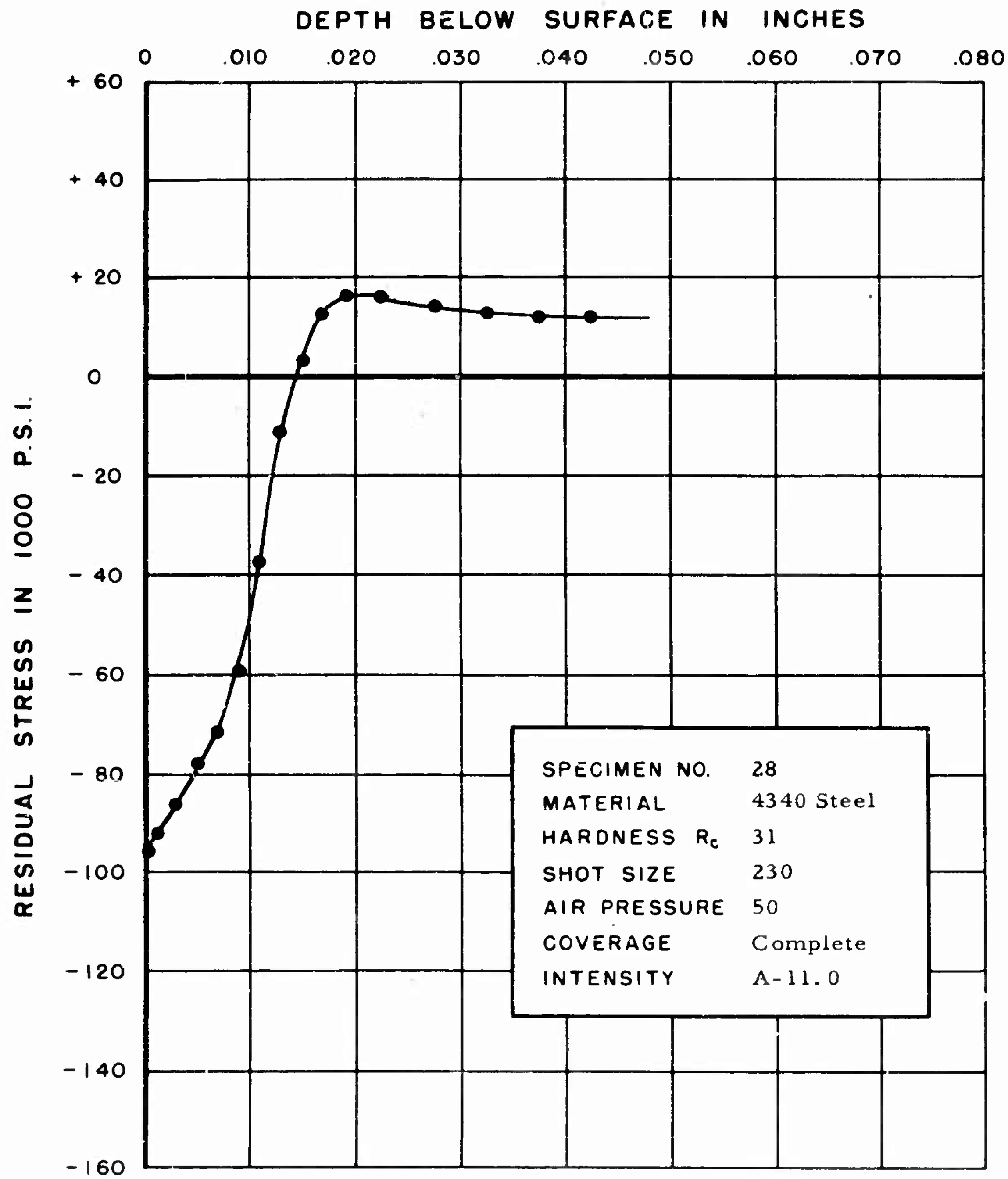


FIGURE 61. RESIDUAL STRESS DISTRIBUTION

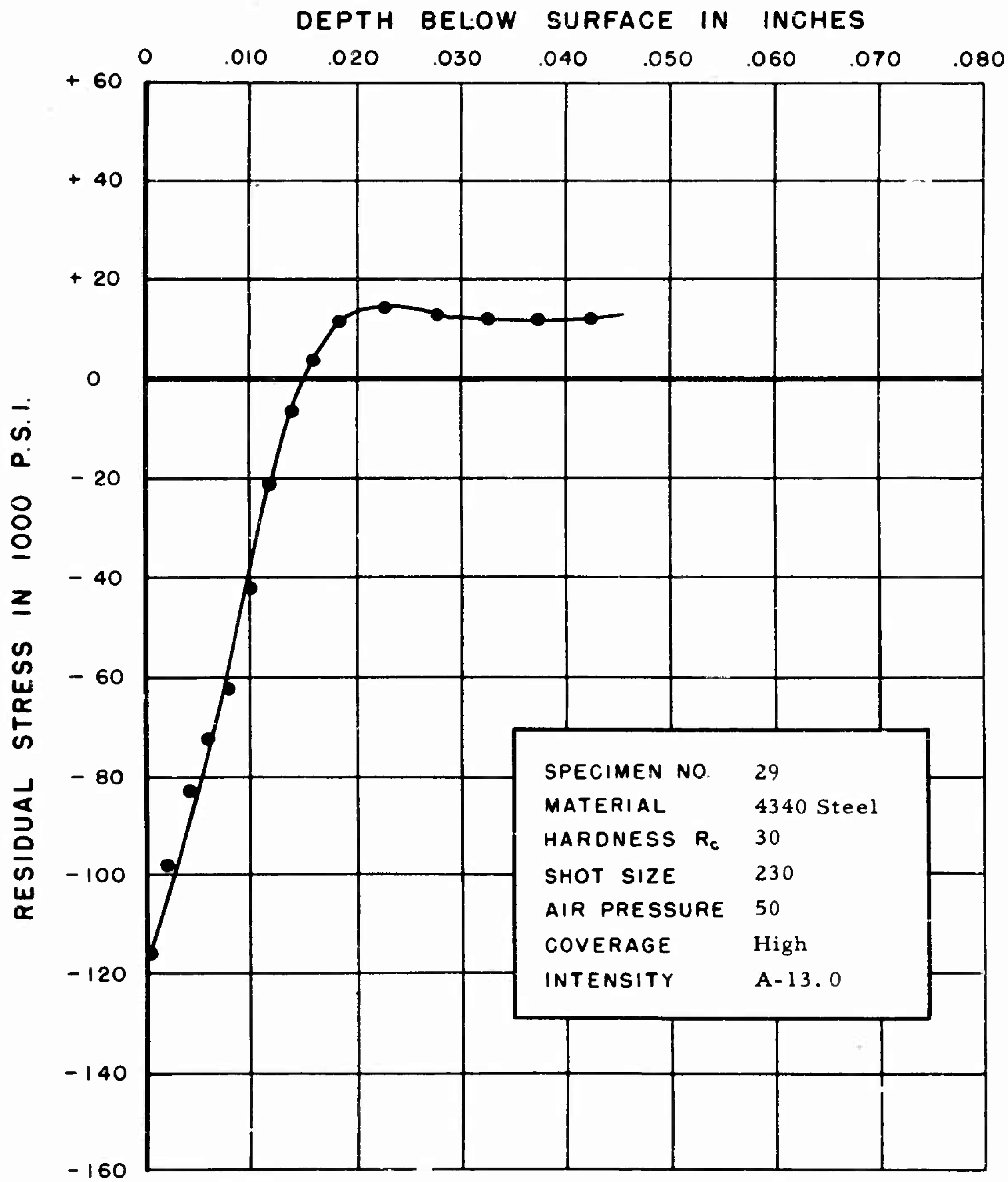


FIGURE 62. RESIDUAL STRESS DISTRIBUTION

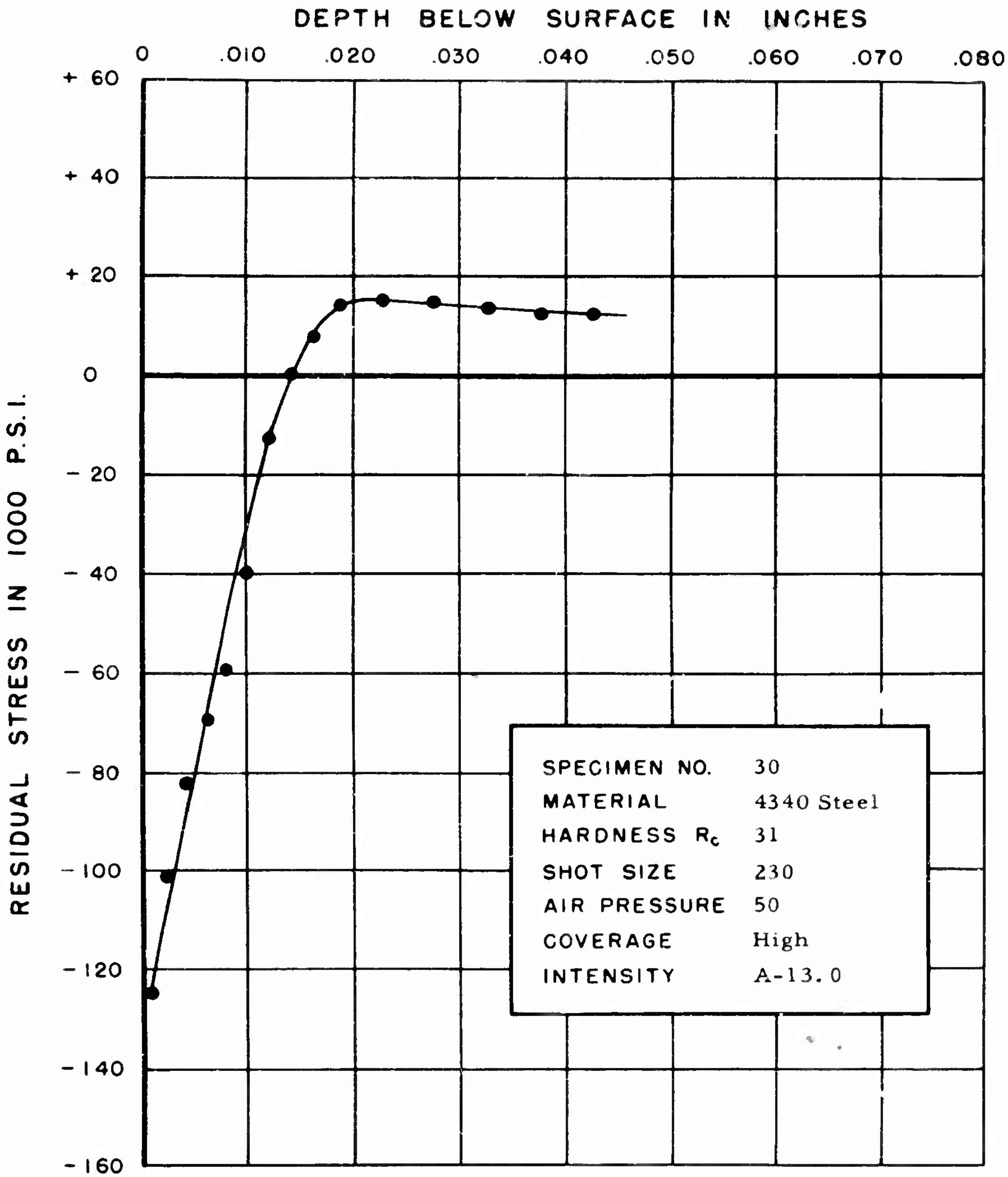


FIGURE 63. RESIDUAL STRESS DISTRIBUTION

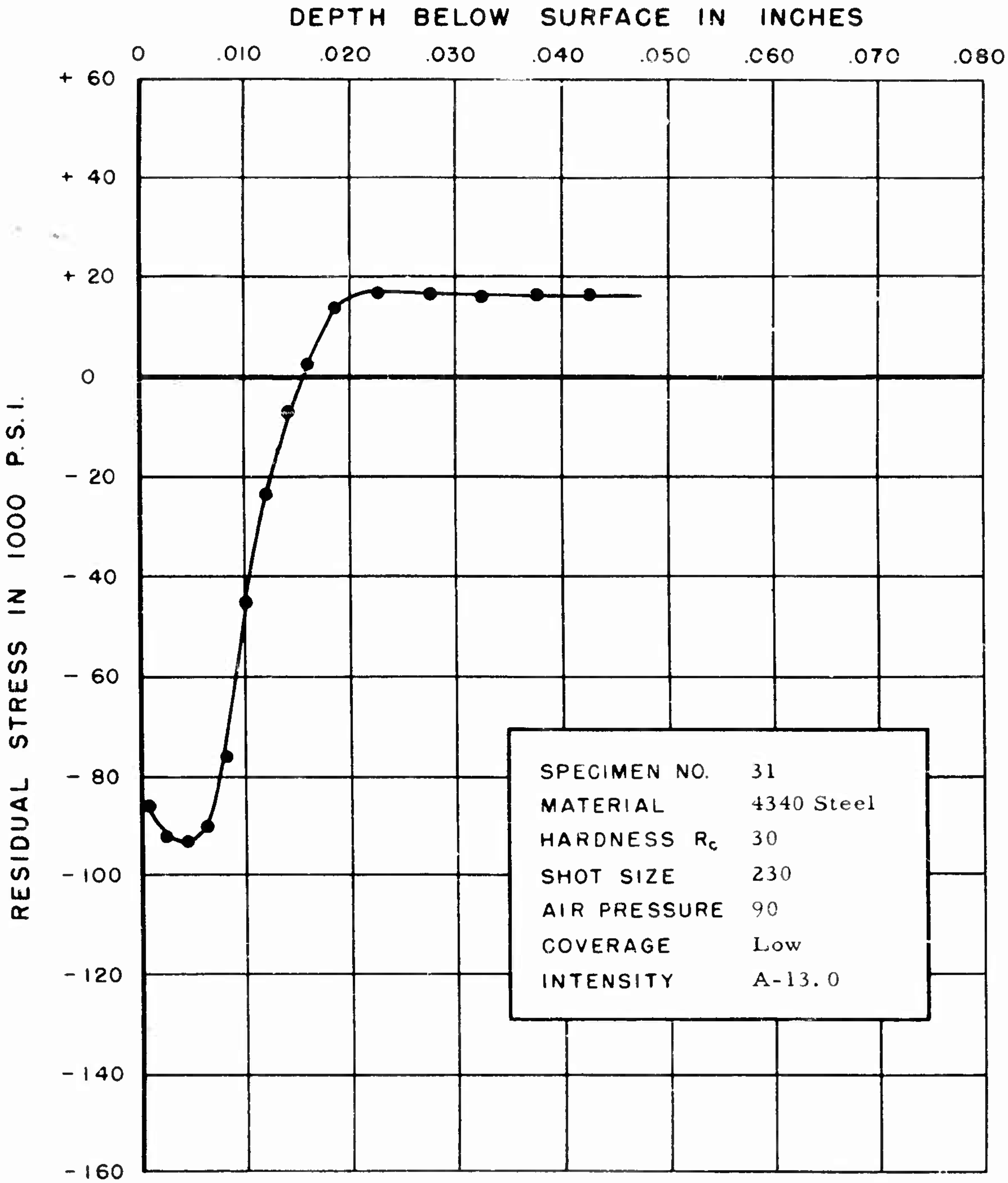


FIGURE 64. RESIDUAL STRESS DISTRIBUTION

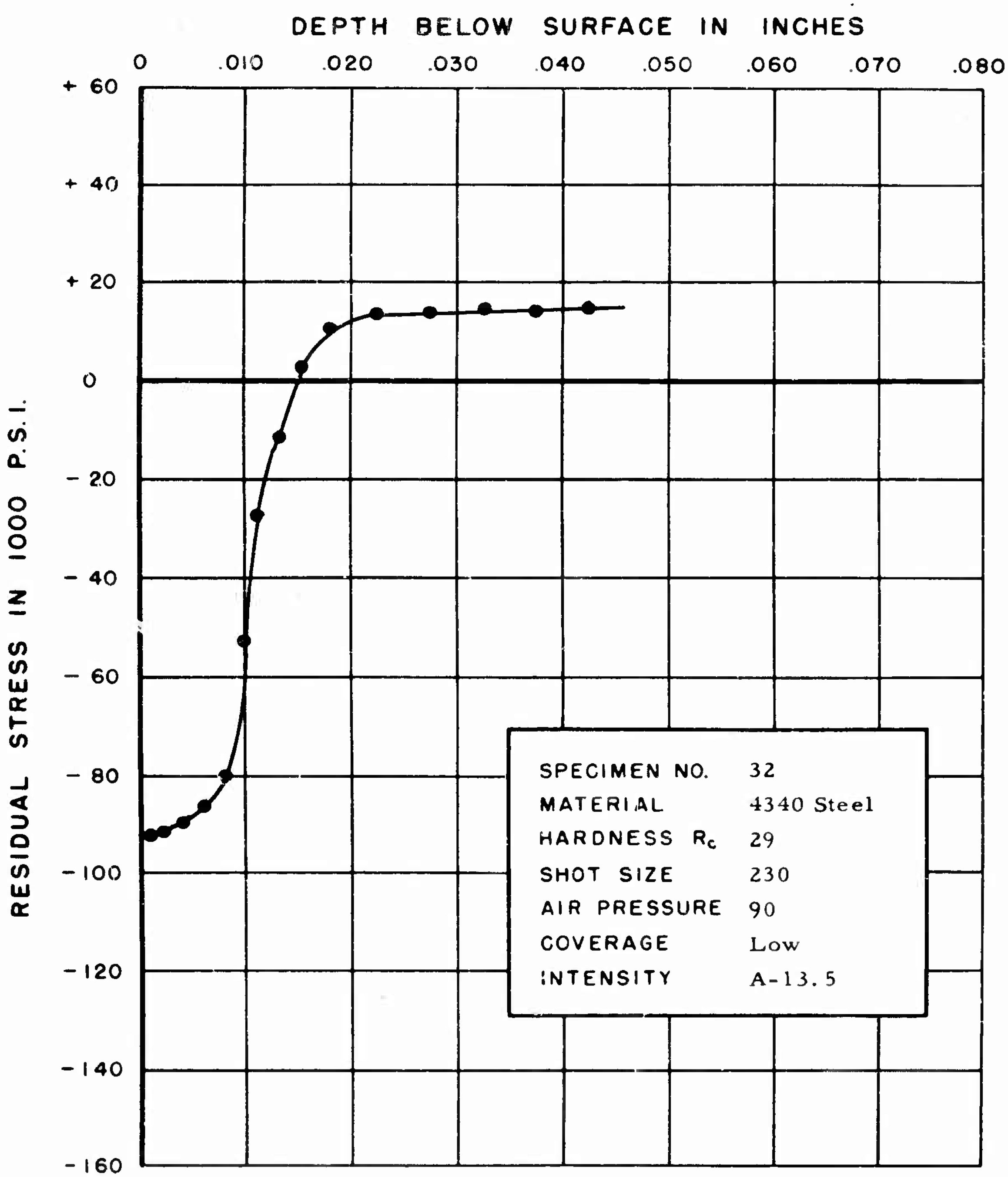


FIGURE 65. RESIDUAL STRESS DISTRIBUTION

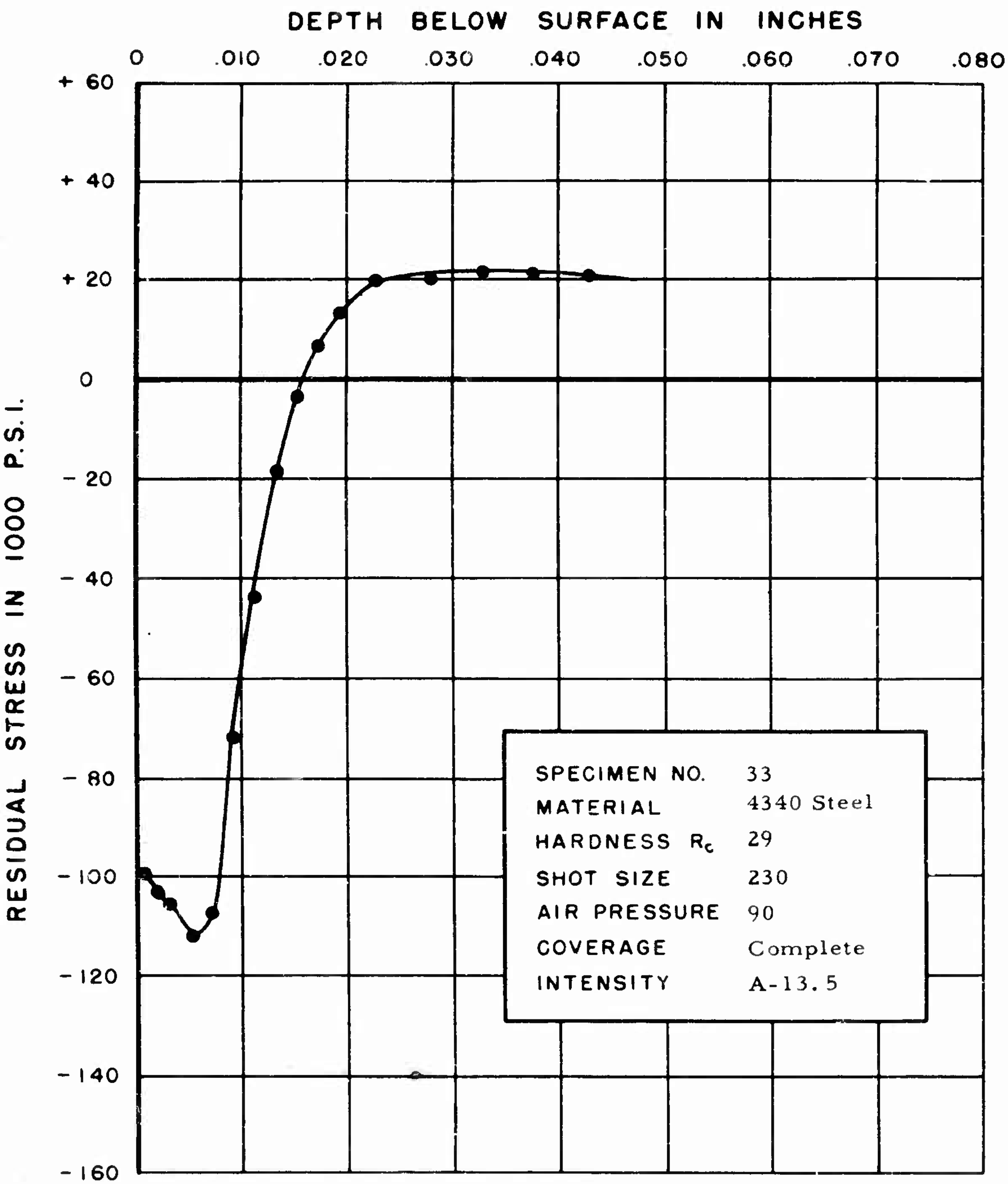


FIGURE 66. RESIDUAL STRESS DISTRIBUTION

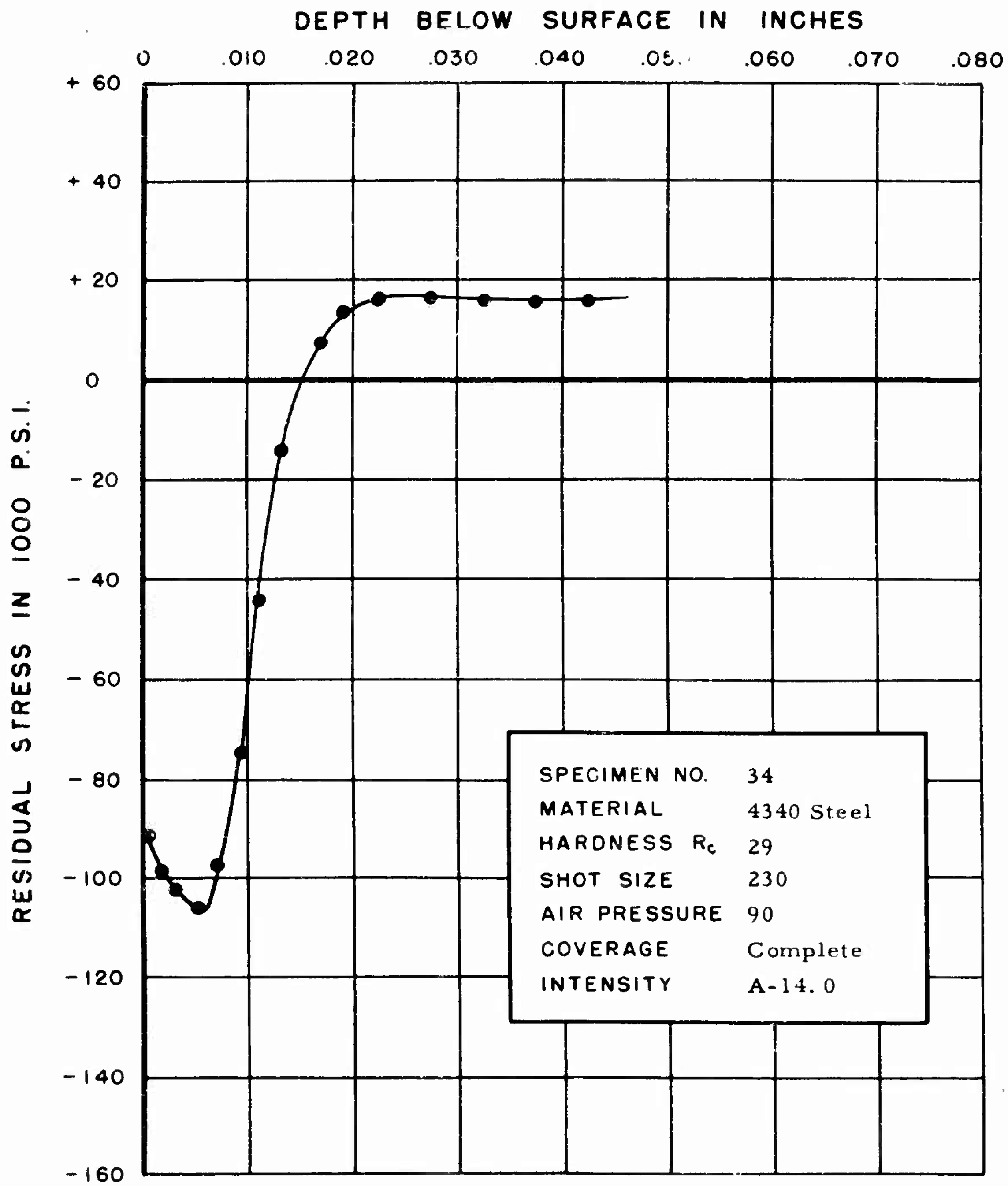


FIGURE 67. RESIDUAL STRESS DISTRIBUTION

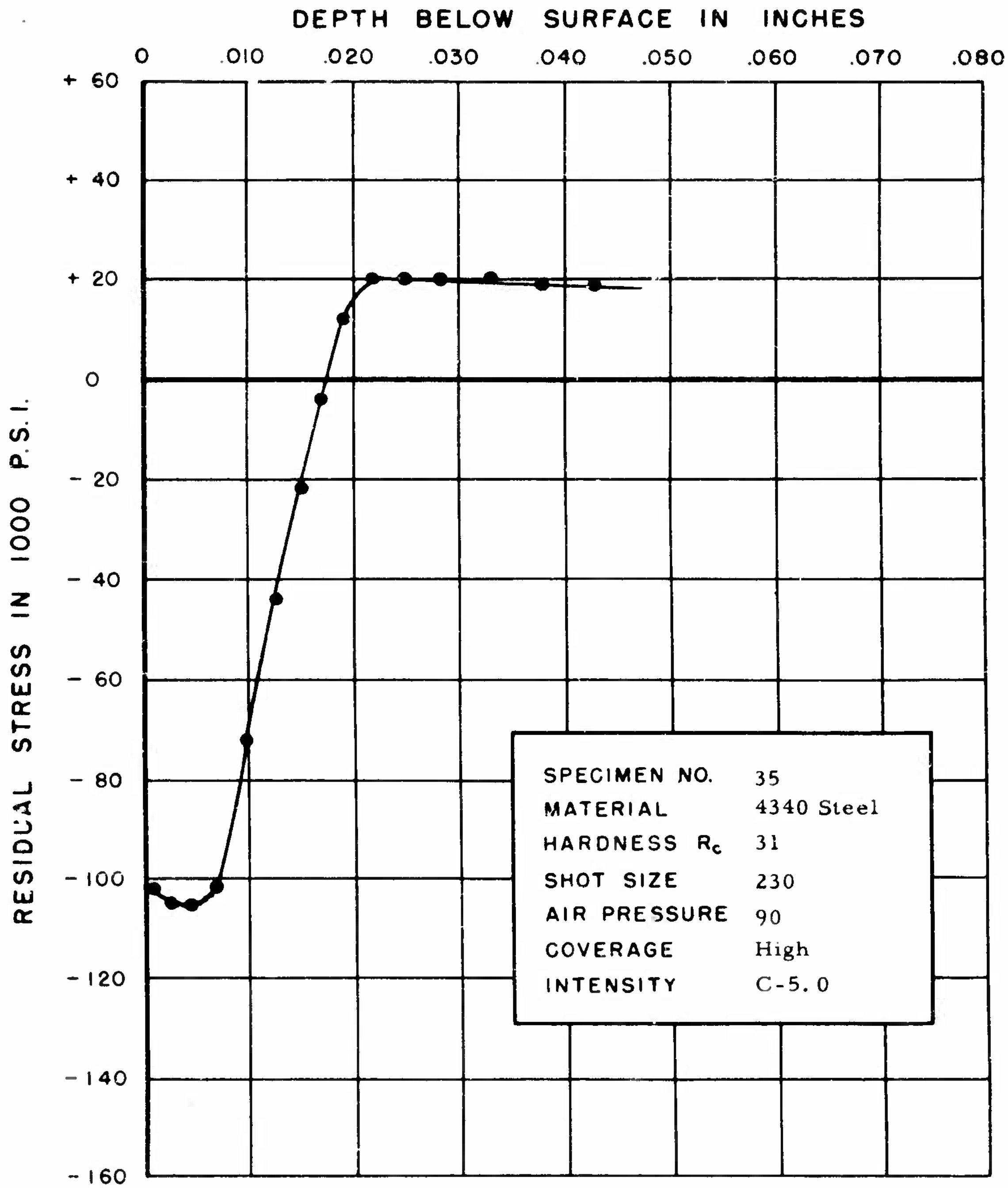


FIGURE 68. RESIDUAL STRESS DISTRIBUTION

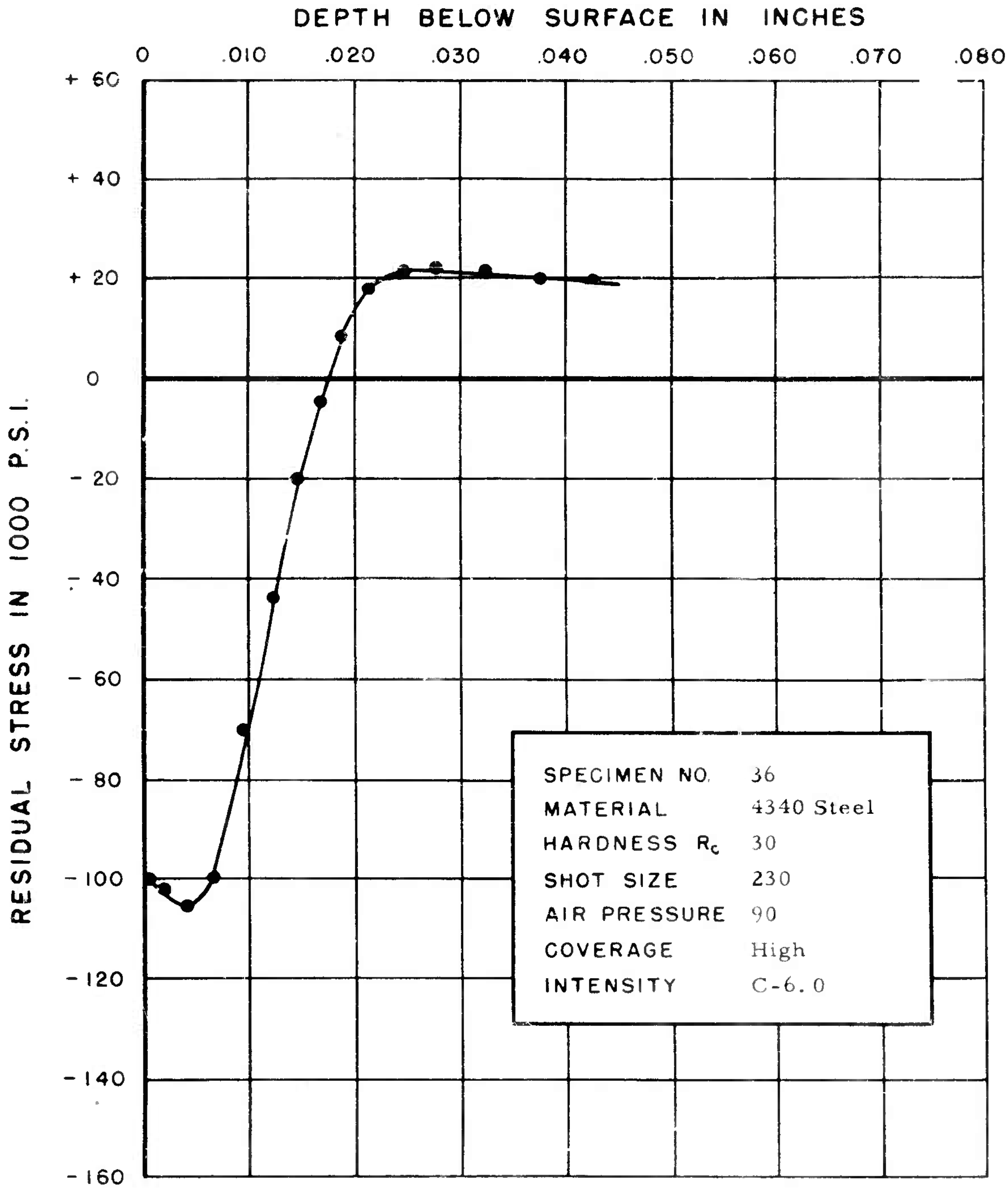


FIGURE 69. RESIDUAL STRESS DISTRIBUTION

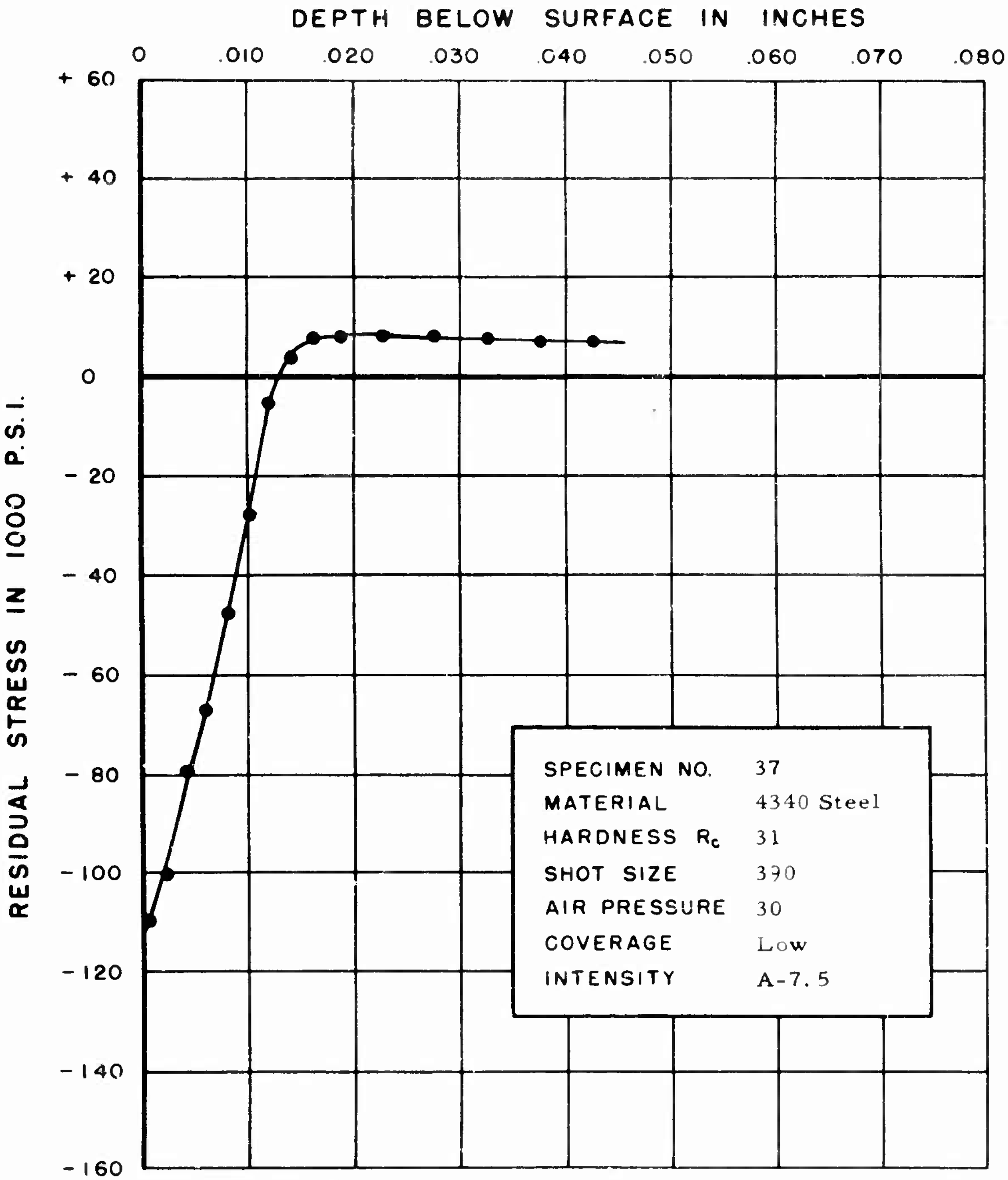


FIGURE 70. RESIDUAL STRESS DISTRIBUTION

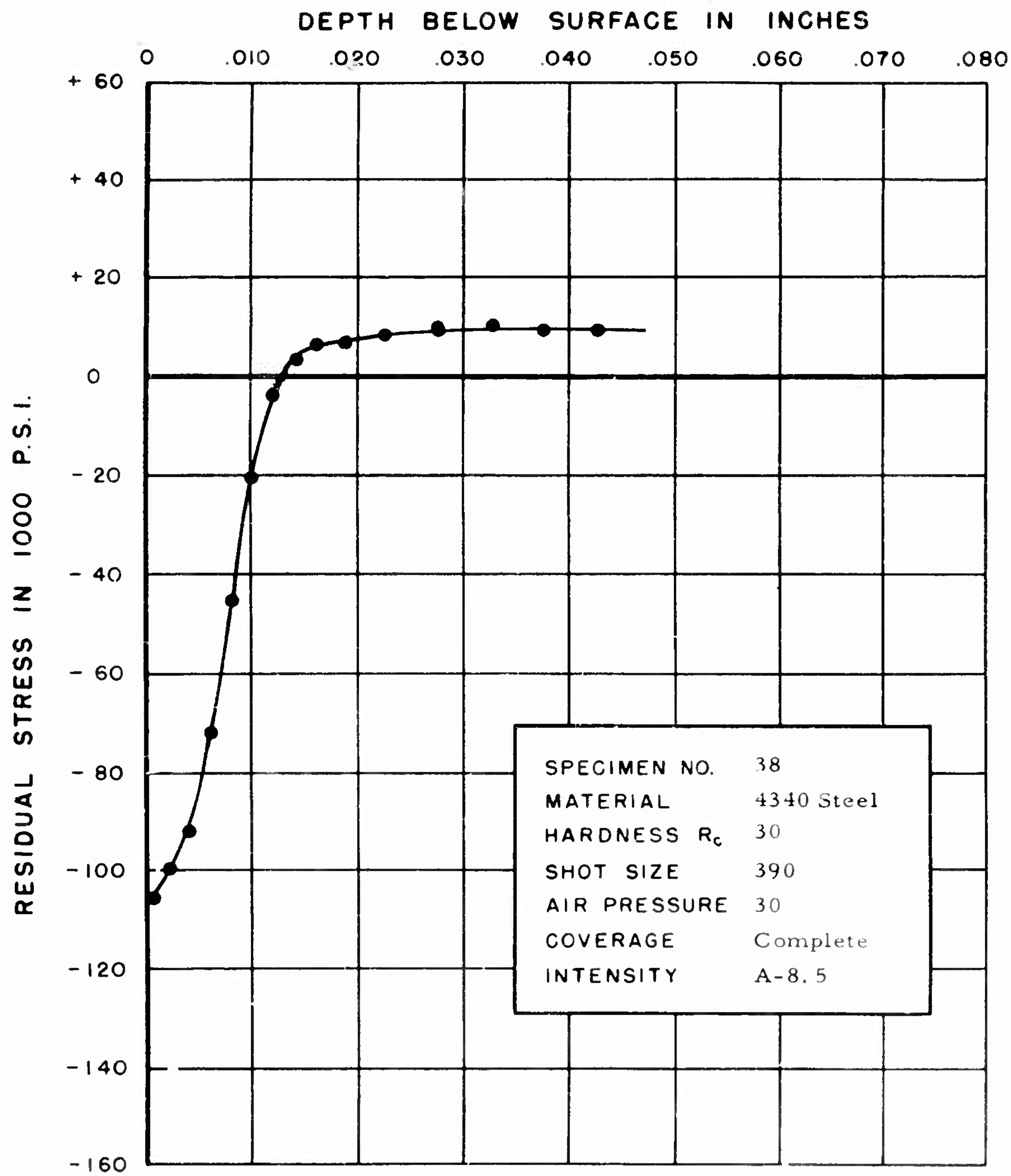


FIGURE 71. RESIDUAL STRESS DISTRIBUTION

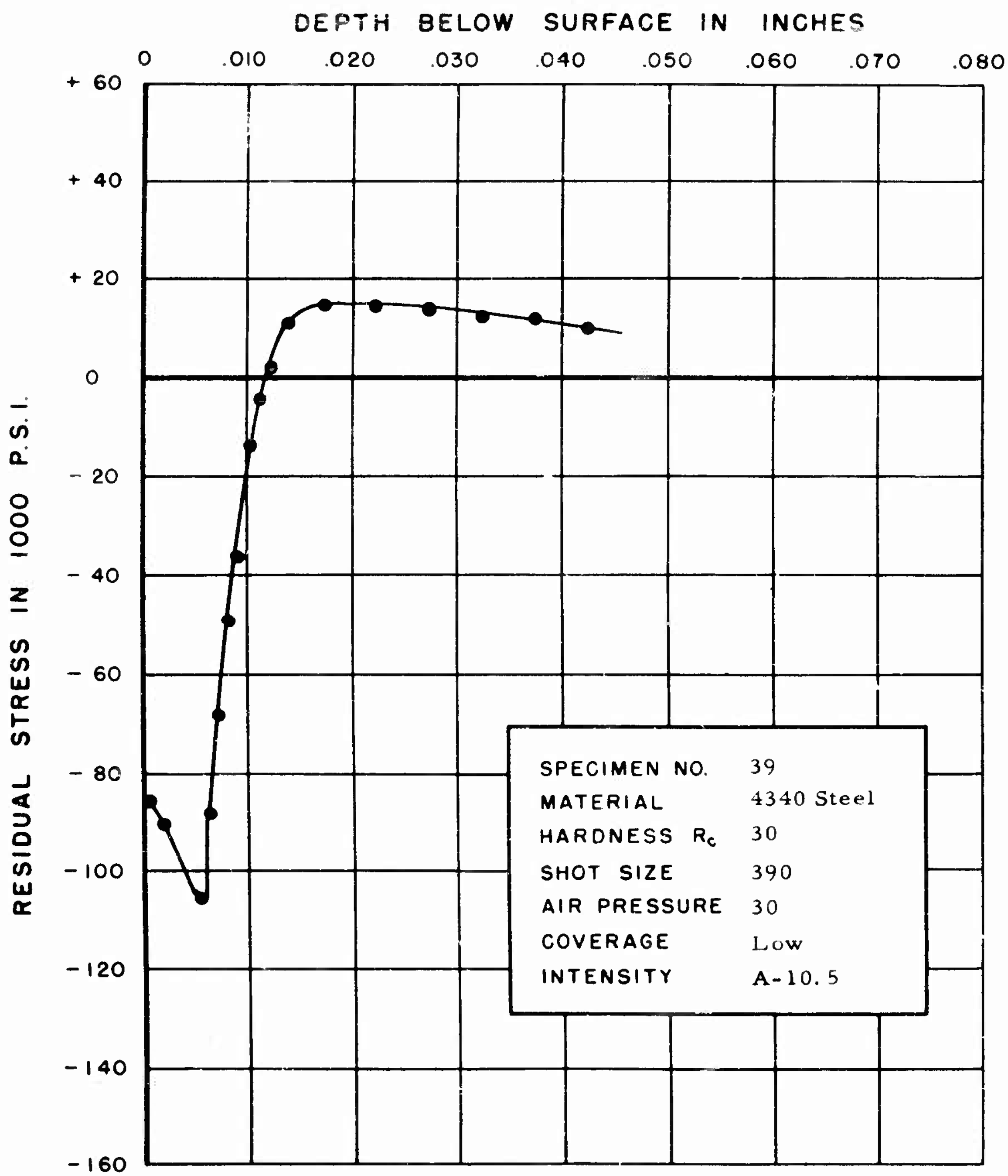


FIGURE 72. RESIDUAL STRESS DISTRIBUTION

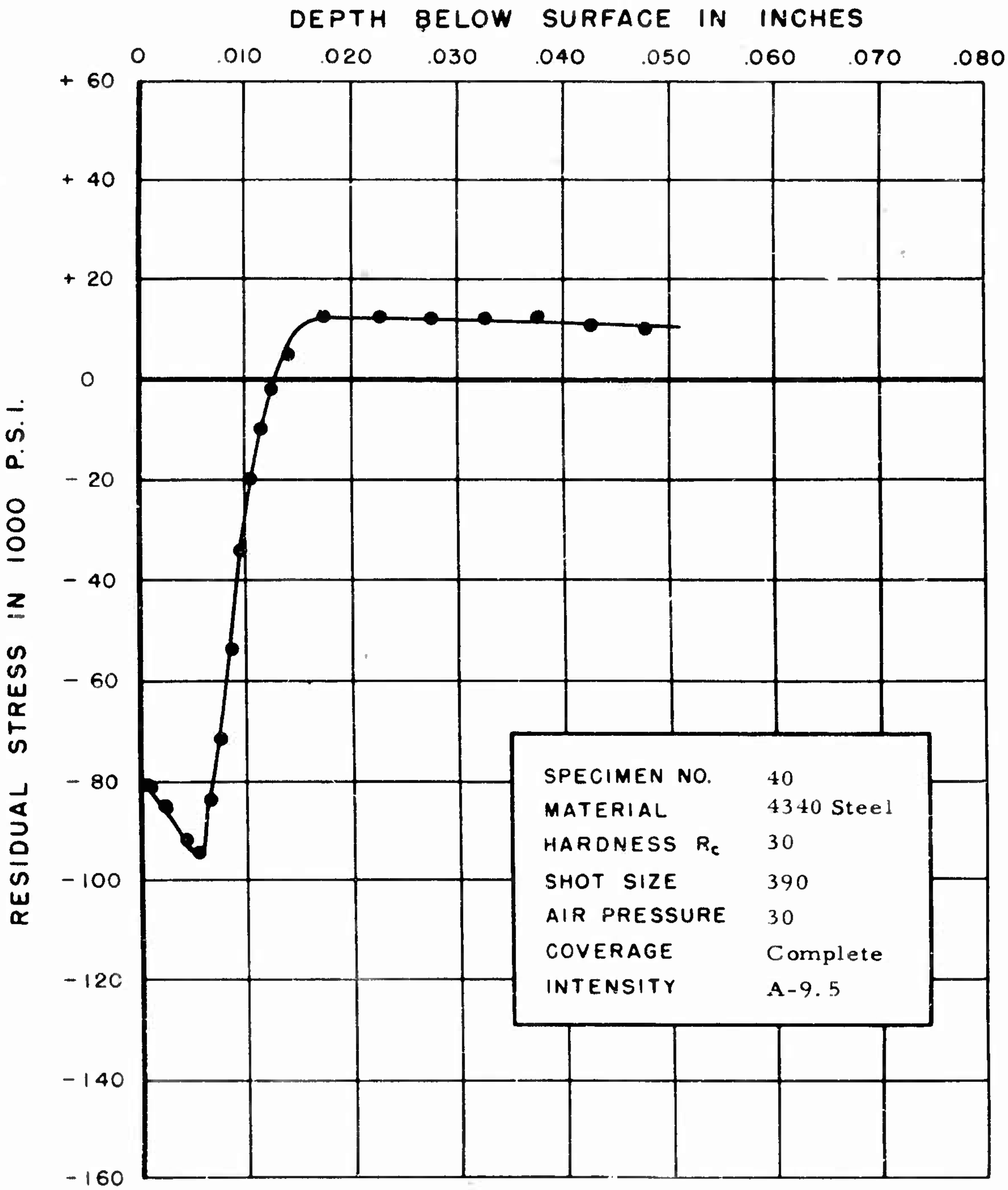


FIGURE 73. RESIDUAL STRESS DISTRIBUTION

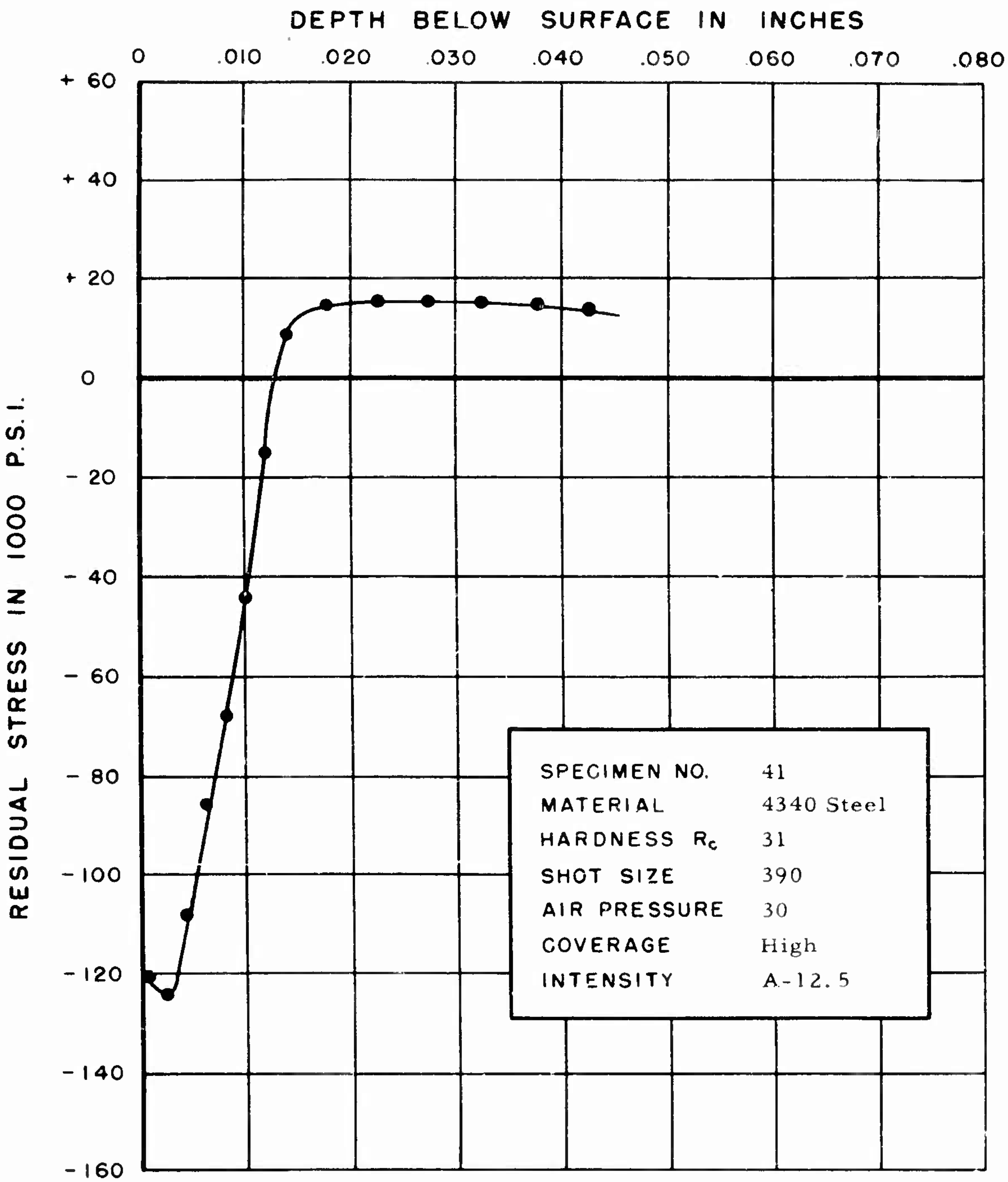


FIGURE 74. RESIDUAL STRESS DISTRIBUTION

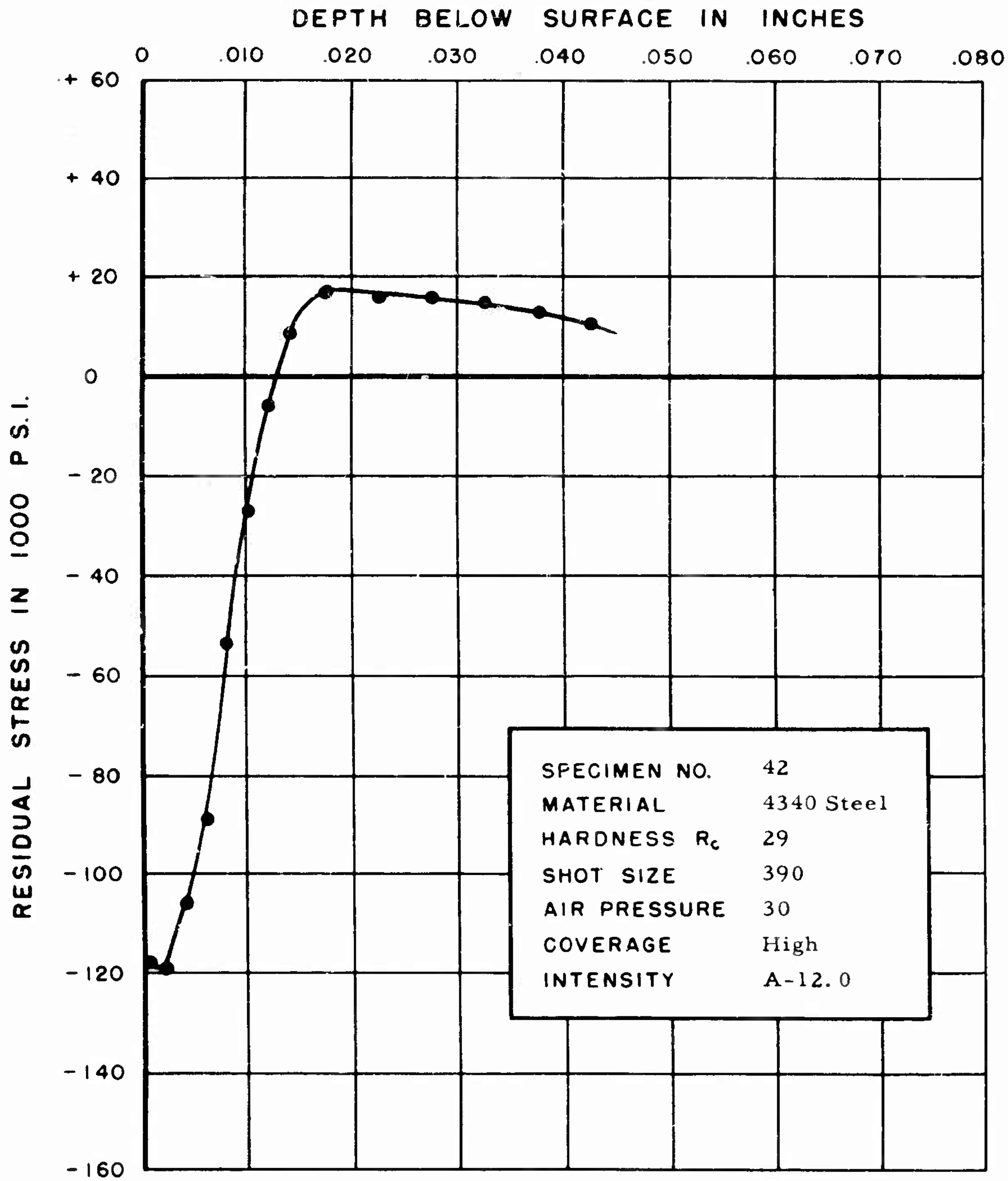


FIGURE 75. RESIDUAL STRESS DISTRIBUTION

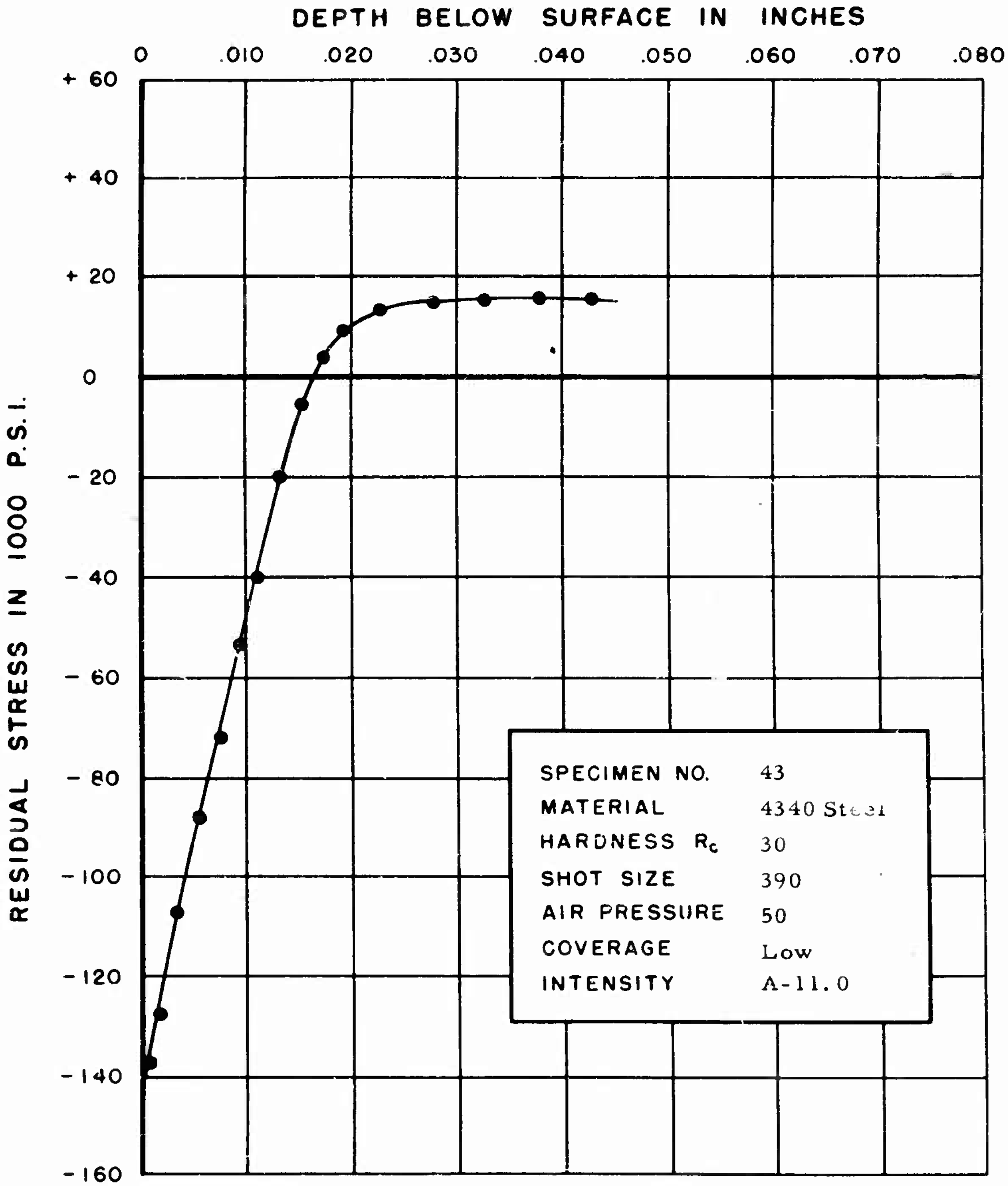


FIGURE 76. RESIDUAL STRESS DISTRIBUTION

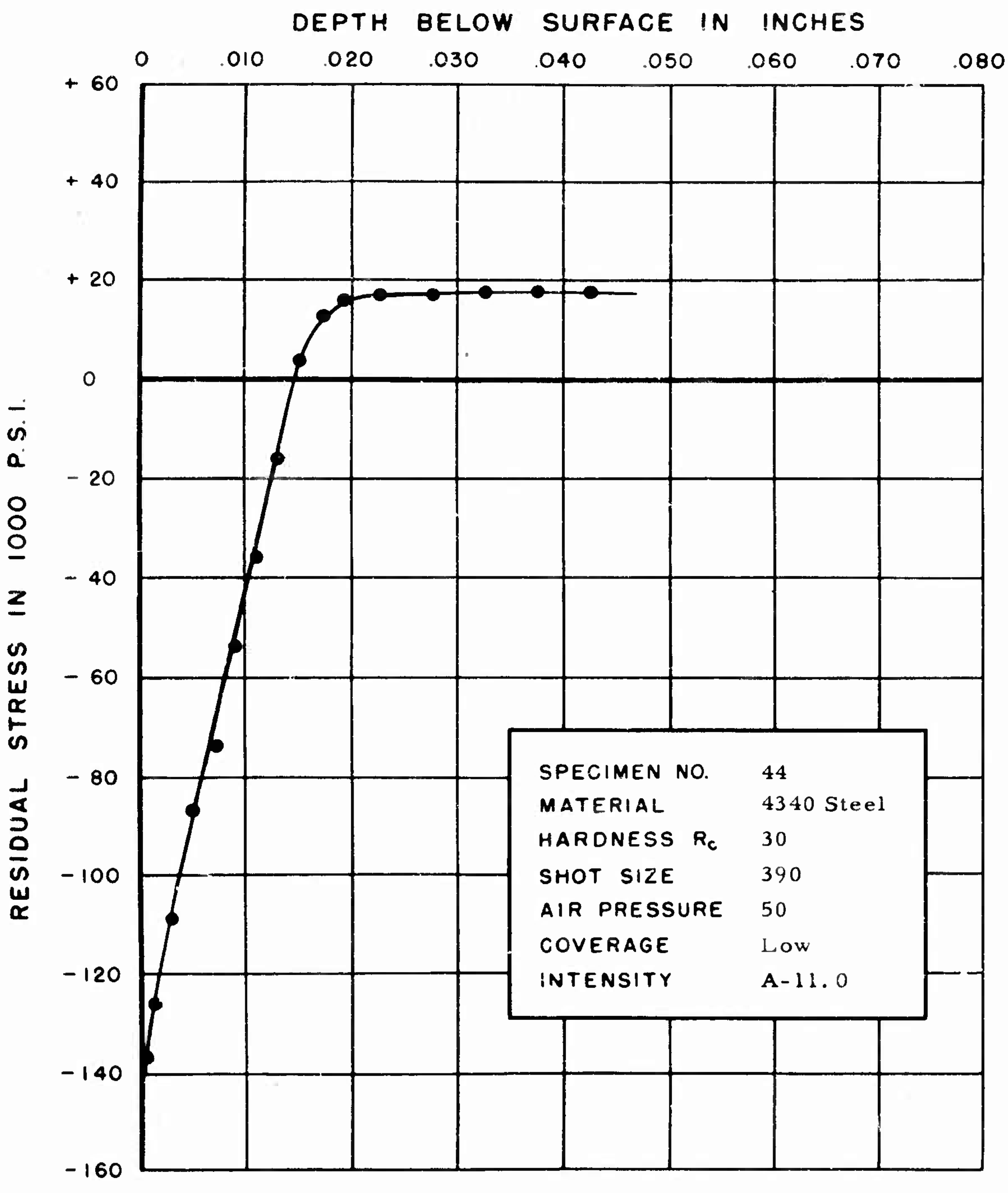


FIGURE 77. RESIDUAL STRESS DISTRIBUTION

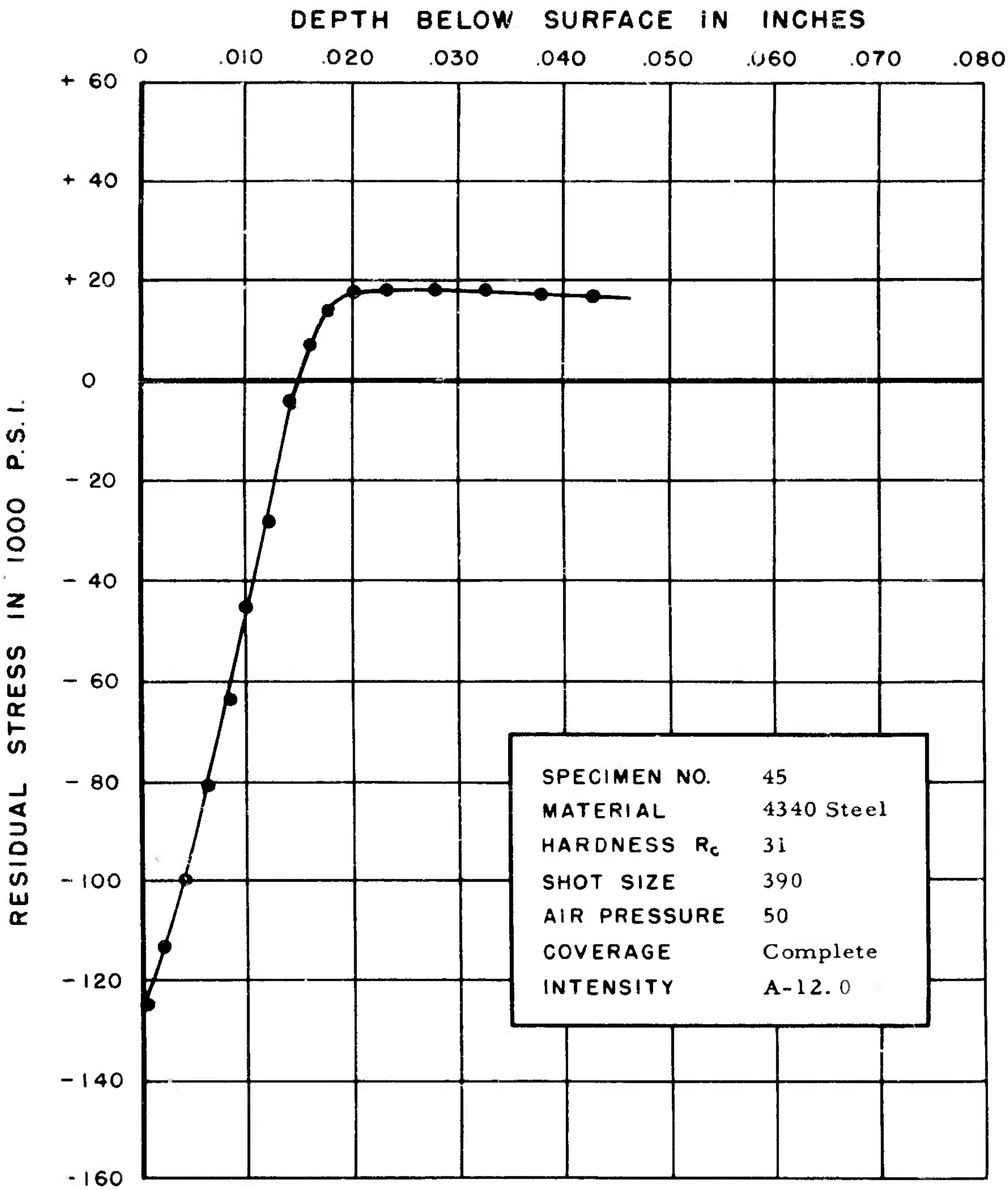


FIGURE 78. RESIDUAL STRESS DISTRIBUTION

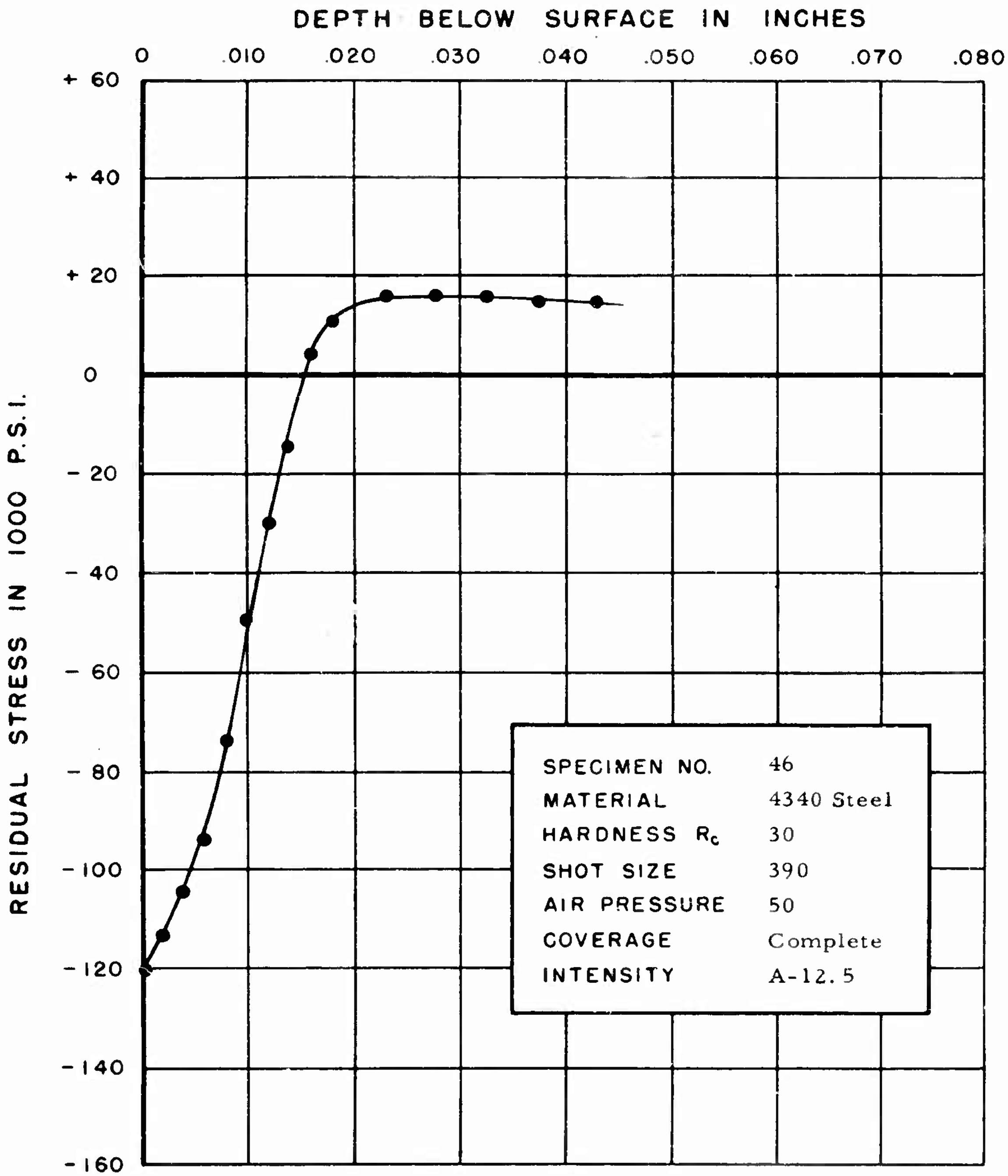


FIGURE 79. RESIDUAL STRESS DISTRIBUTION

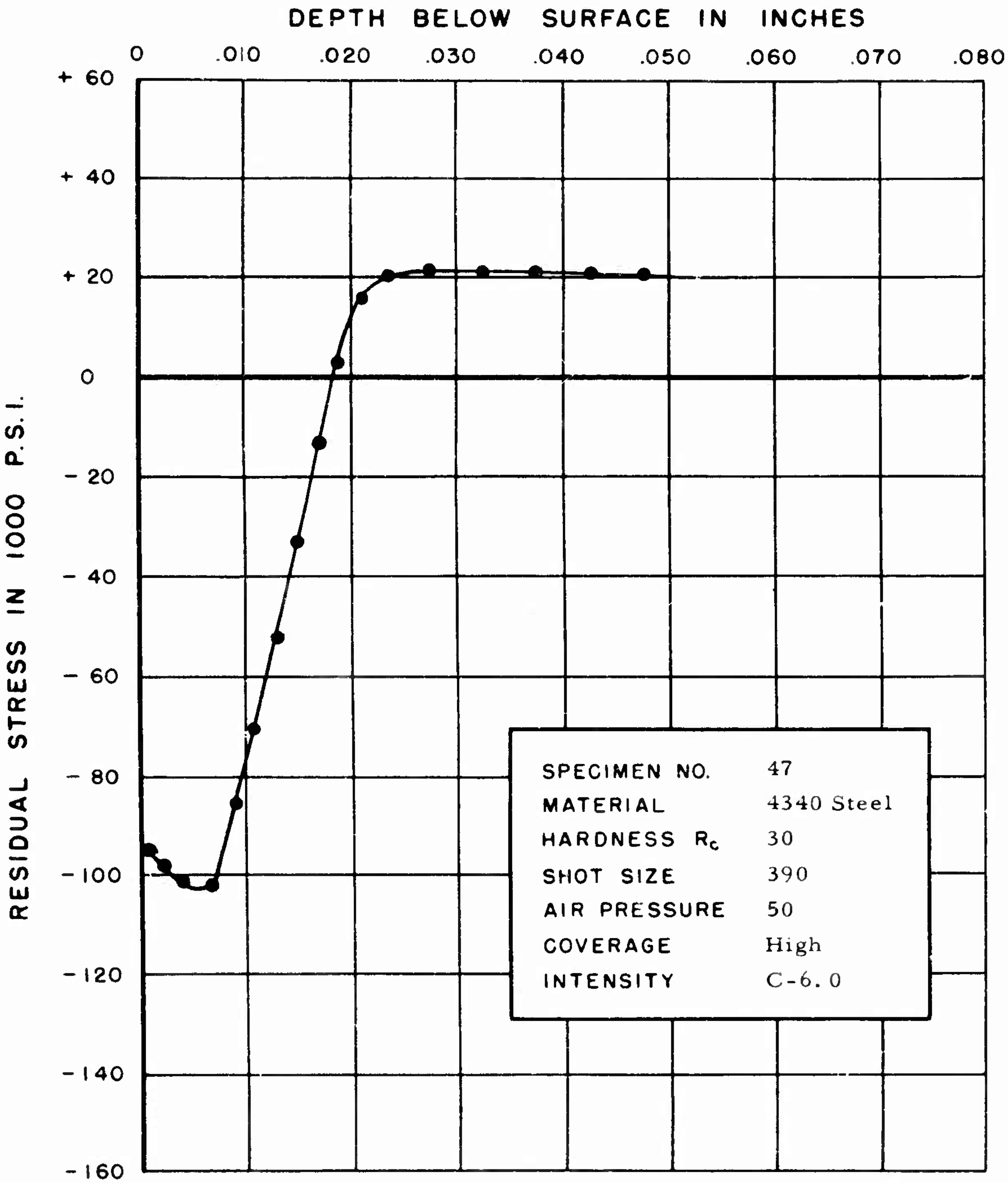


FIGURE 80. RESIDUAL STRESS DISTRIBUTION

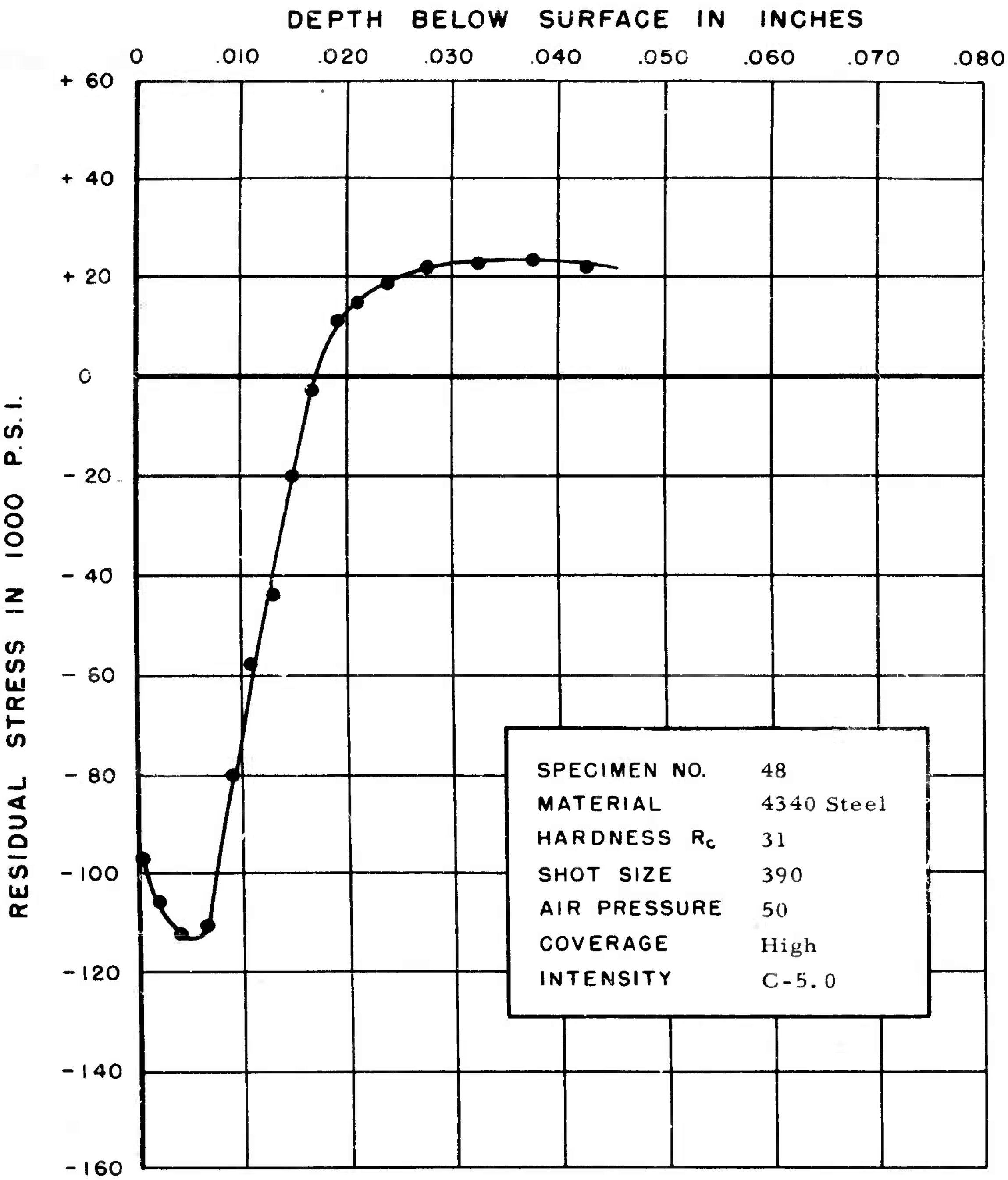


FIGURE 81. RESIDUAL STRESS DISTRIBUTION

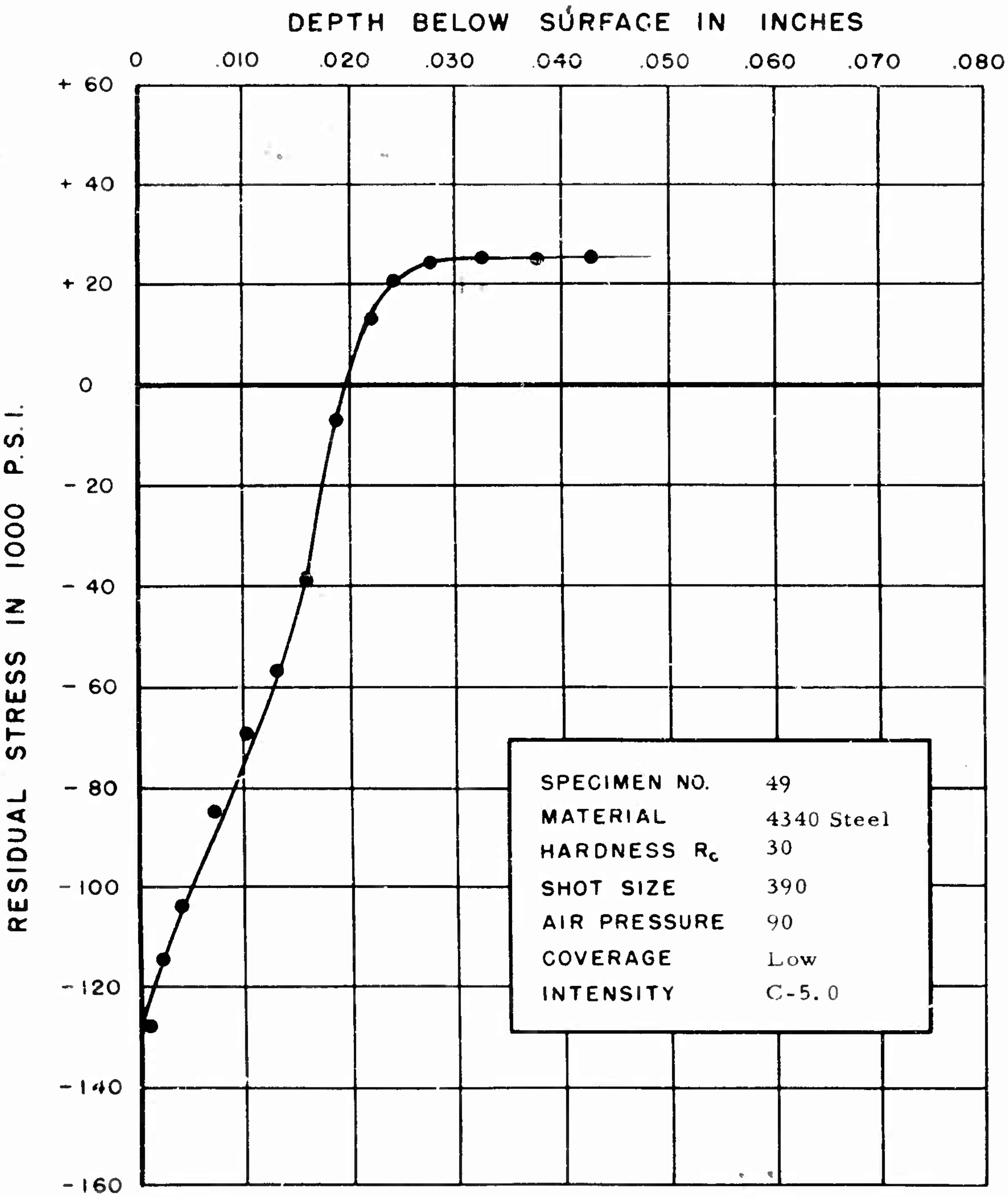


FIGURE 82. RESIDUAL STRESS DISTRIBUTION

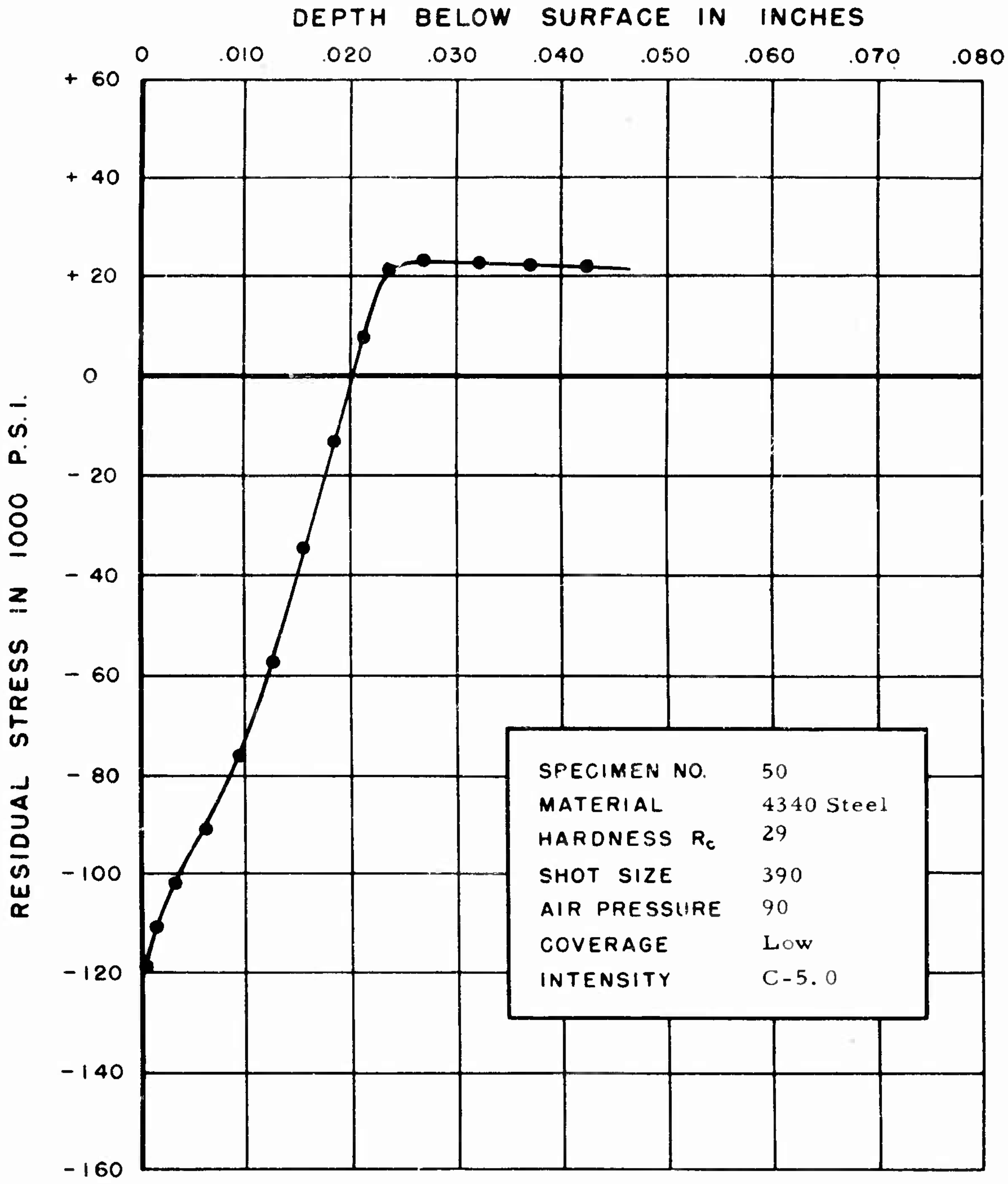


FIGURE 83. RESIDUAL STRESS DISTRIBUTION

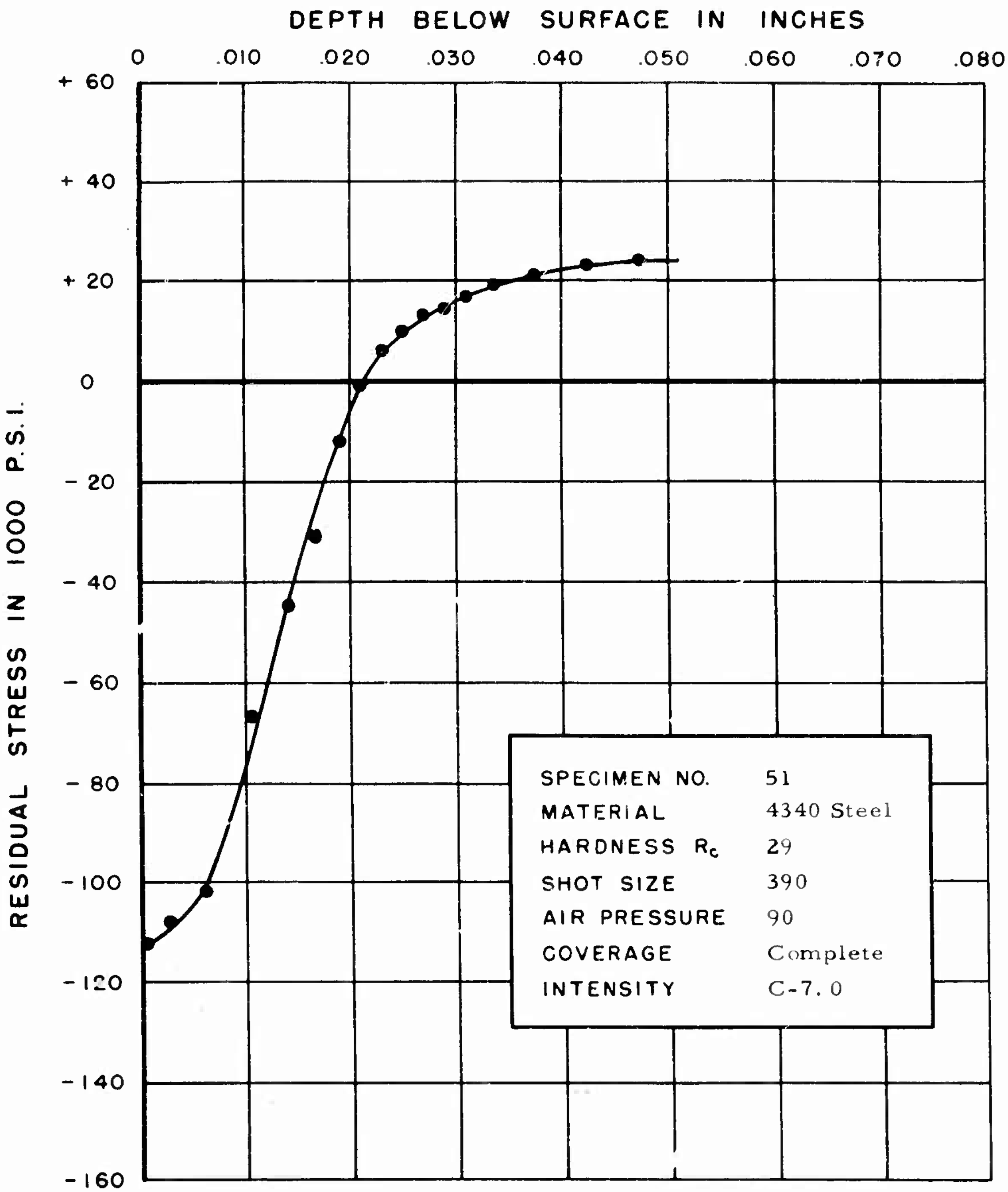


FIGURE 84. RESIDUAL STRESS DISTRIBUTION

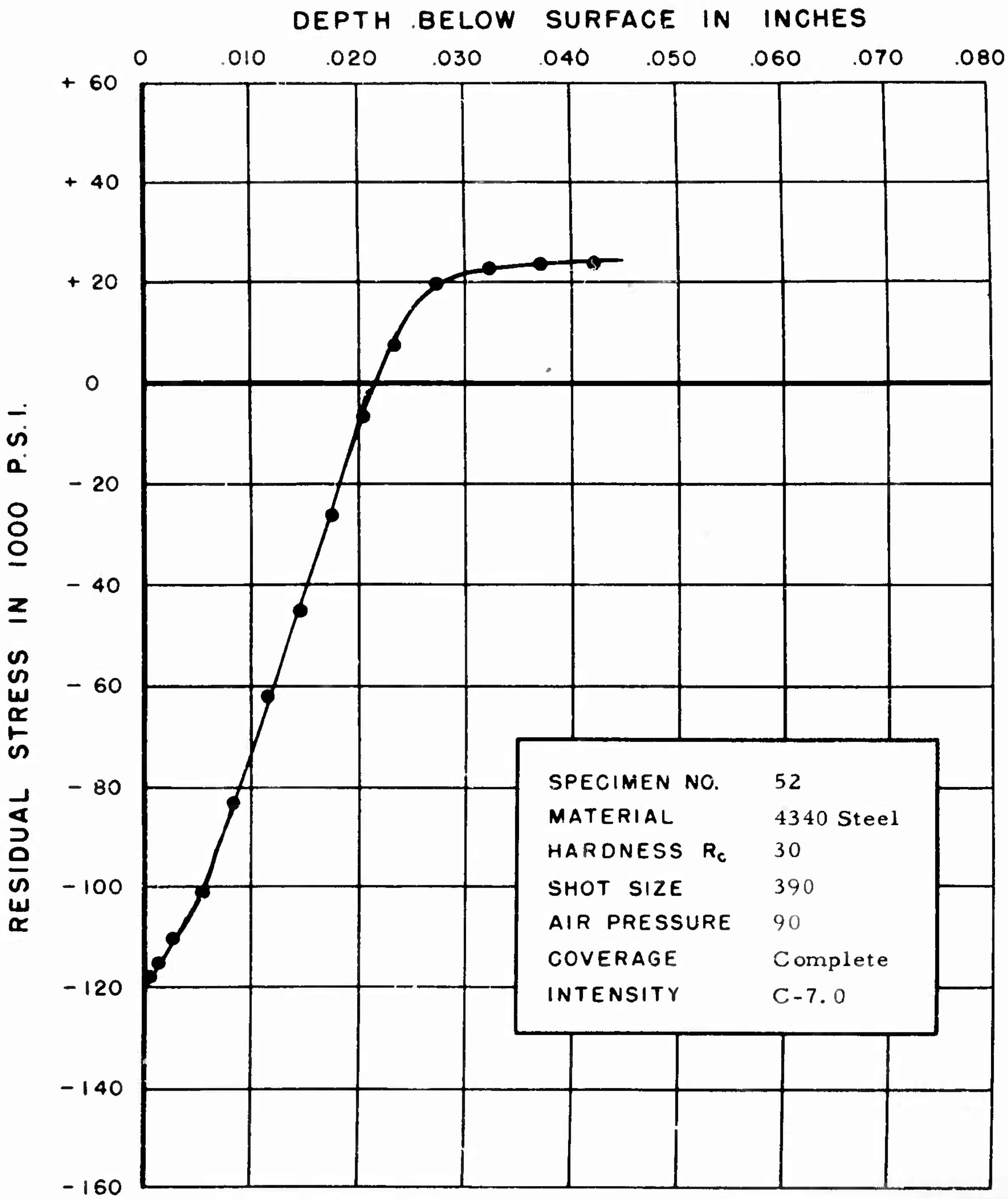


FIGURE 85. RESIDUAL STRESS DISTRIBUTION

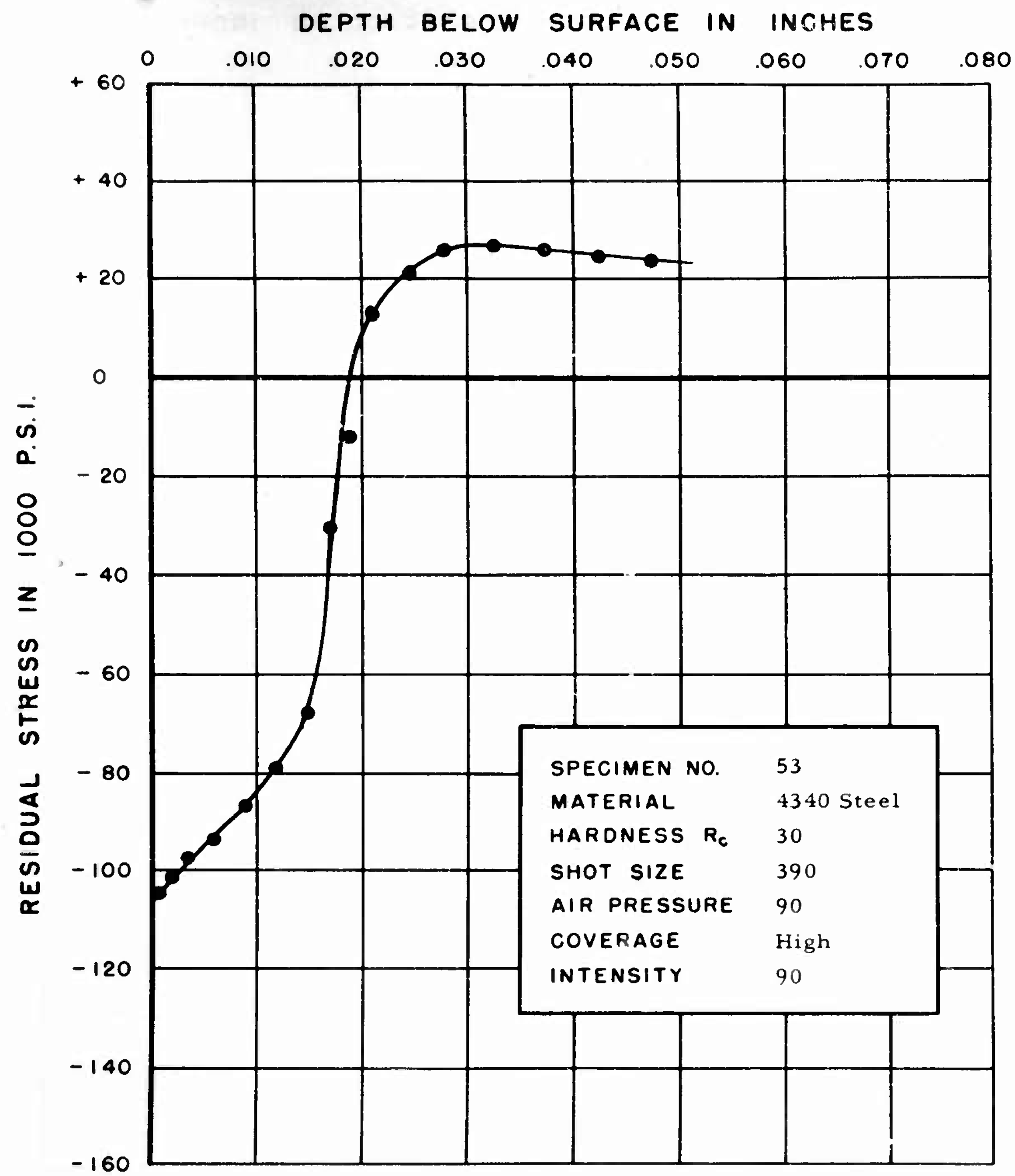


FIGURE 86. RESIDUAL STRESS DISTRIBUTION

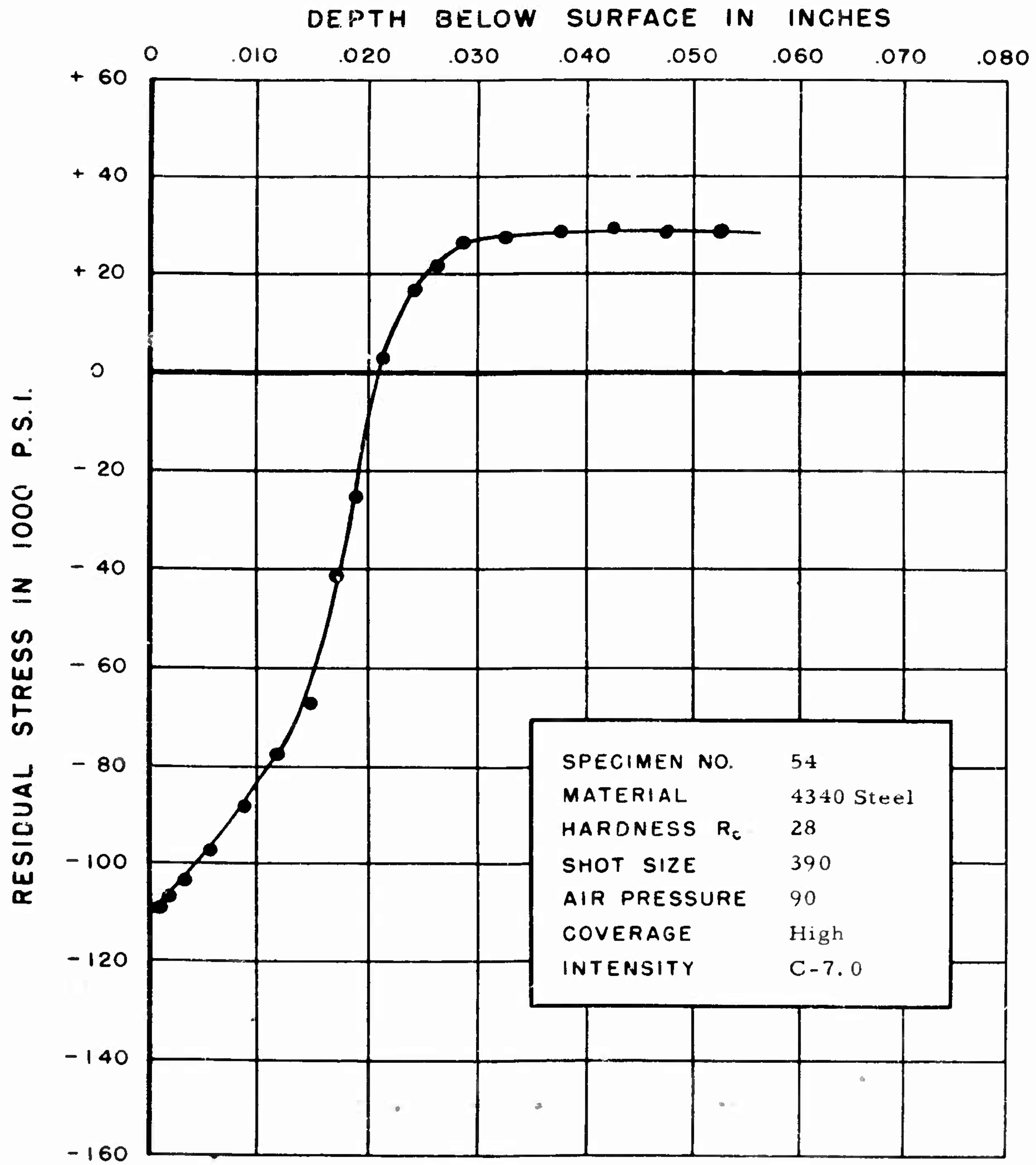


FIGURE 87. RESIDUAL STRESS DISTRIBUTION

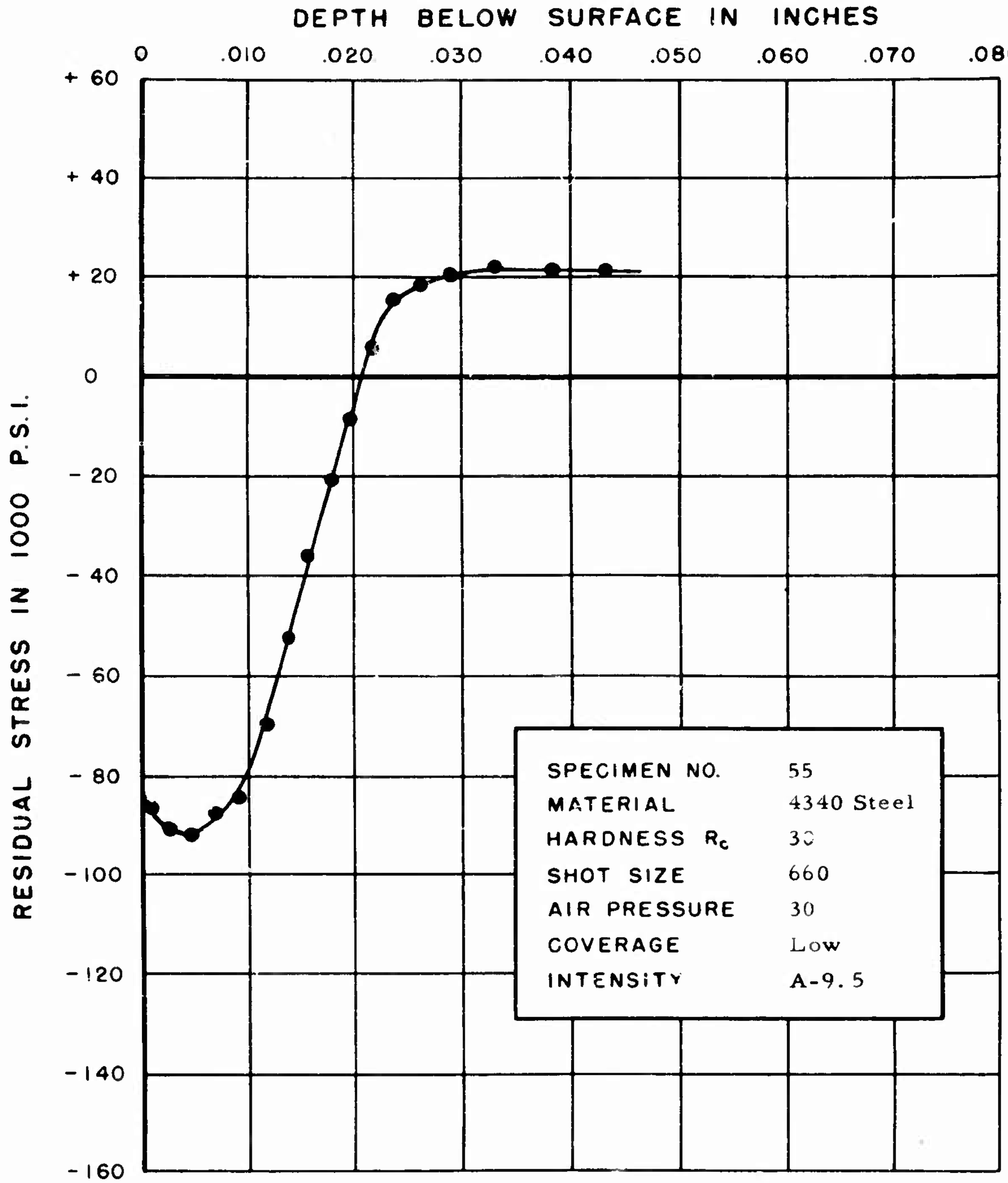


FIGURE 88. RESIDUAL STRESS DISTRIBUTION

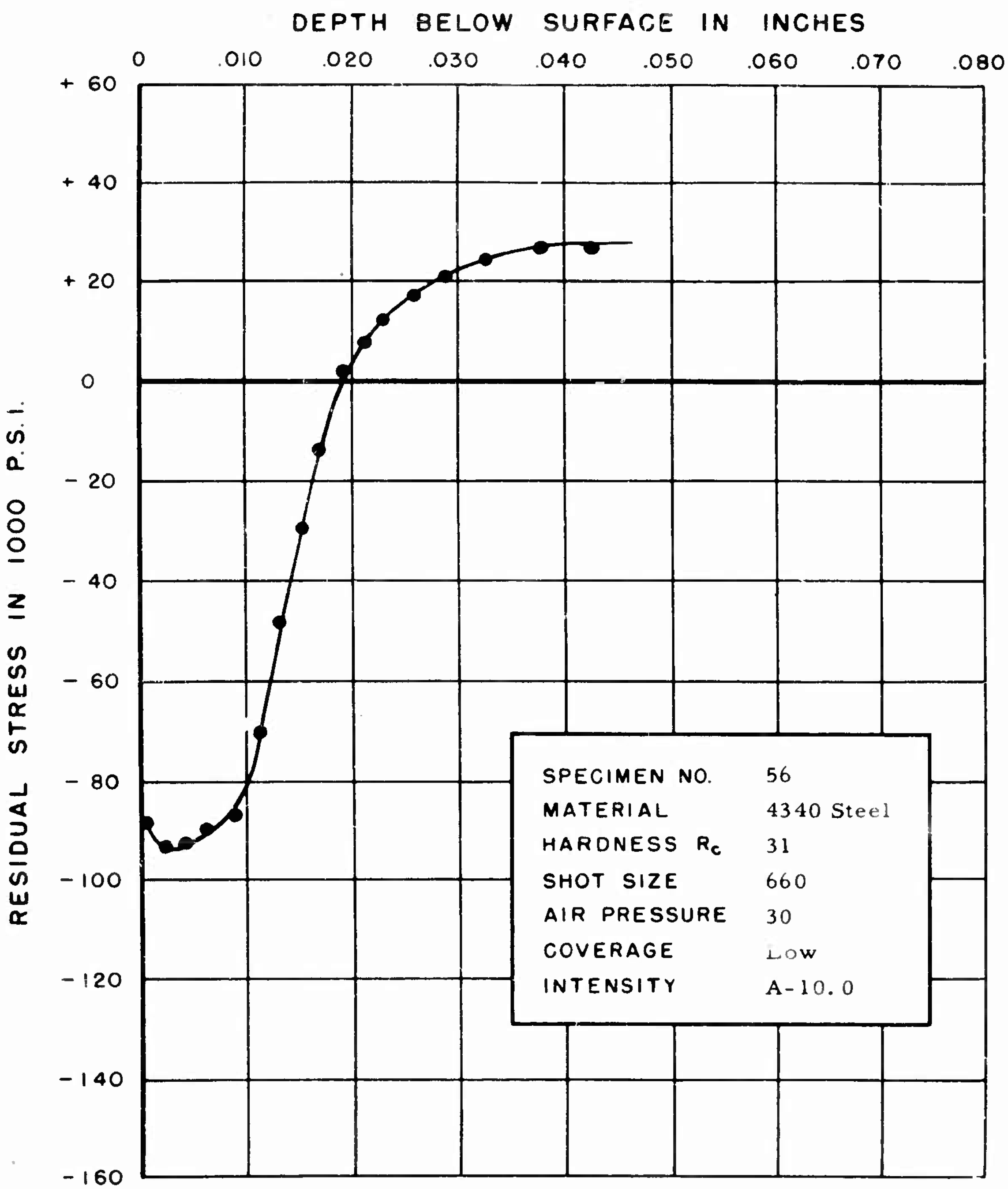


FIGURE 89. RESIDUAL STRESS DISTRIBUTION

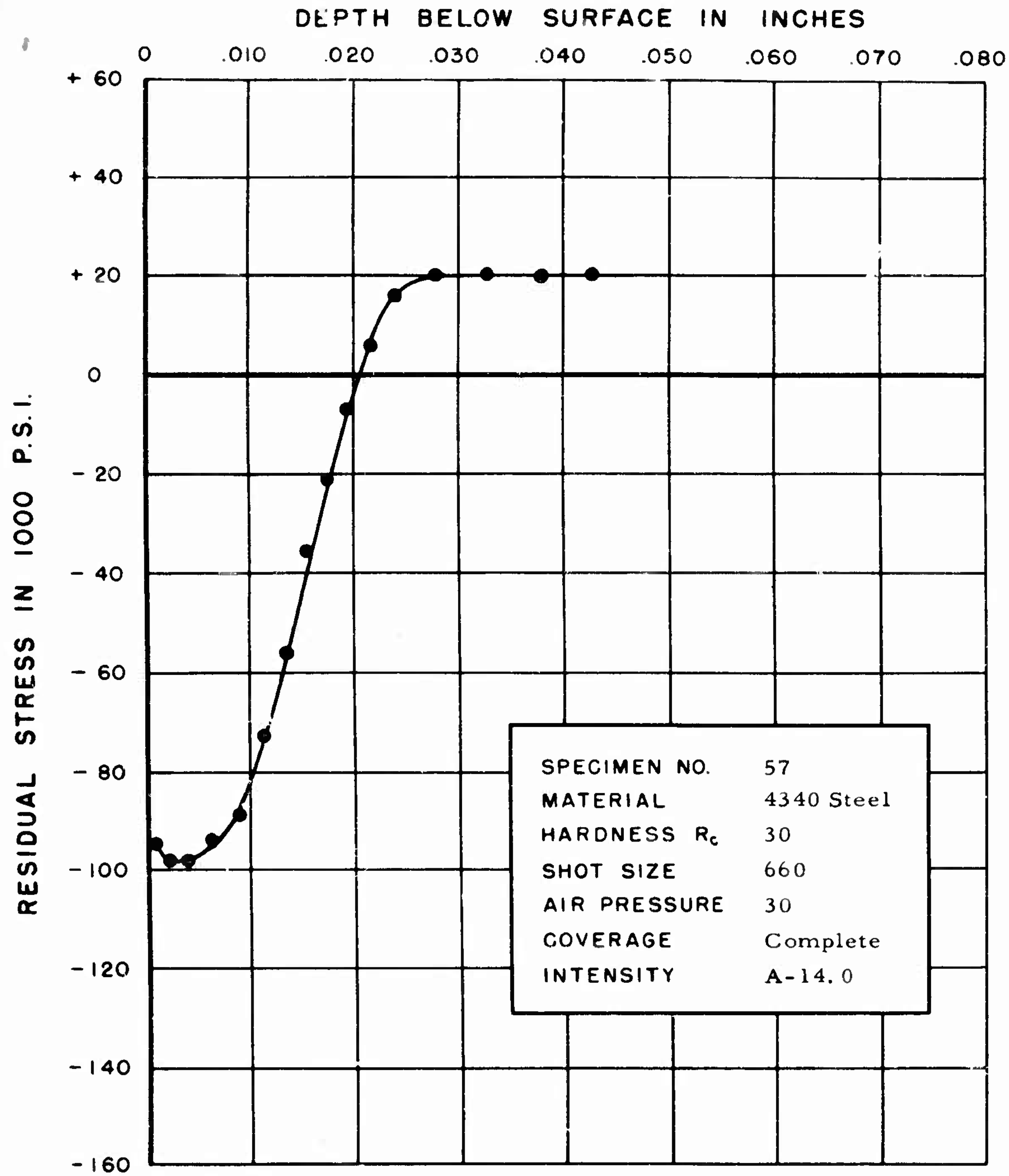


FIGURE 90. RESIDUAL STRESS DISTRIBUTION

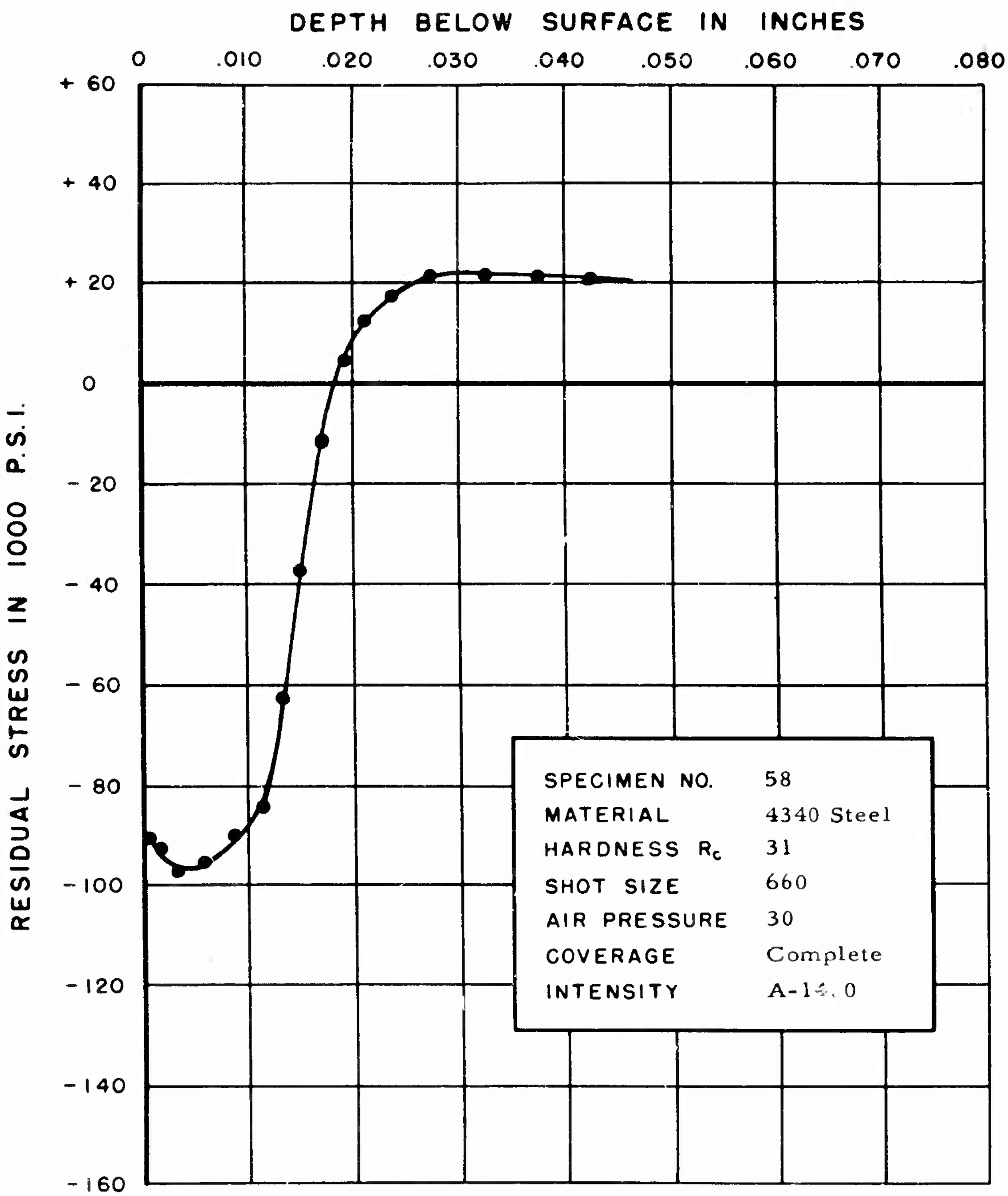
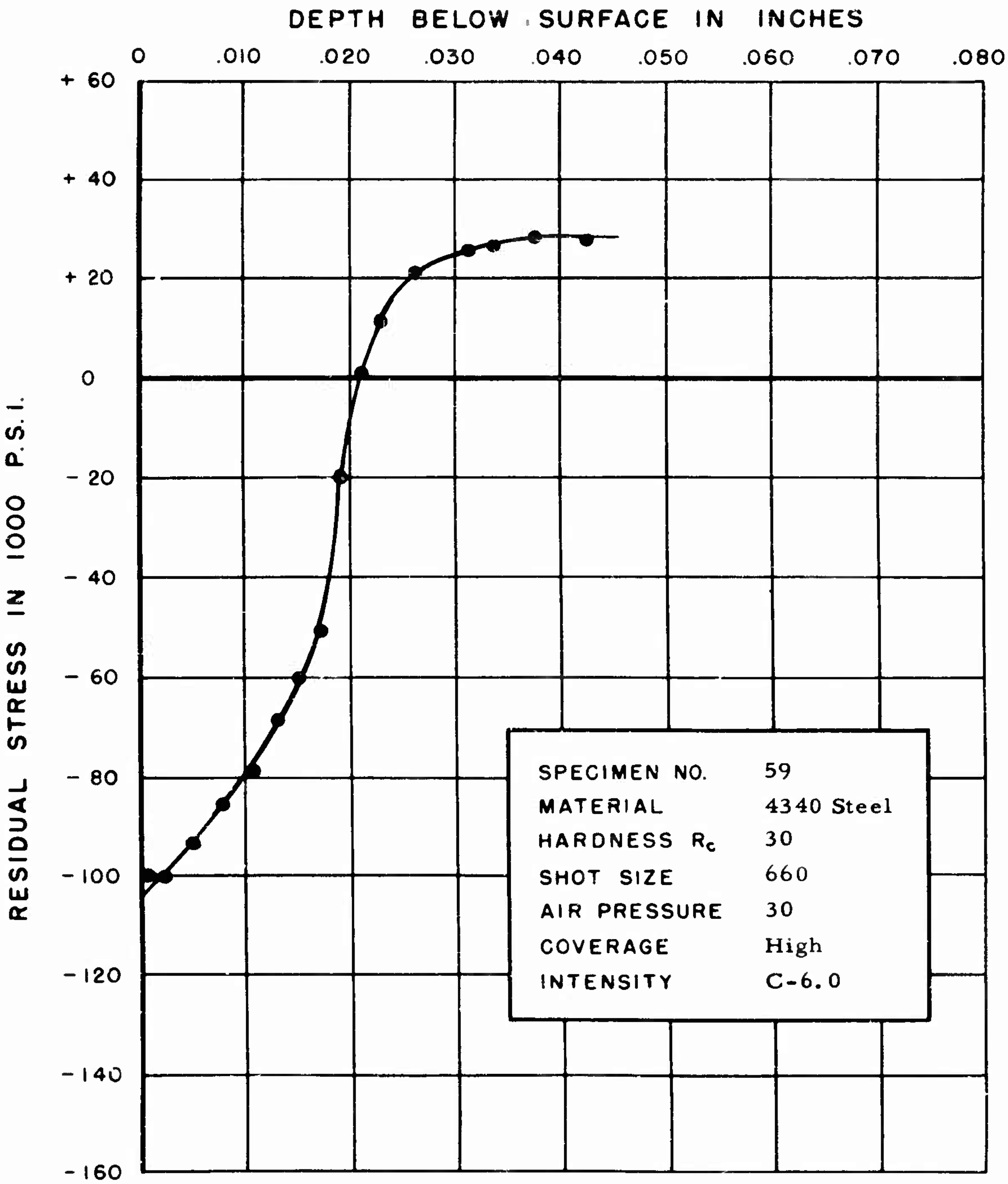


FIGURE 91. RESIDUAL STRESS DISTRIBUTION



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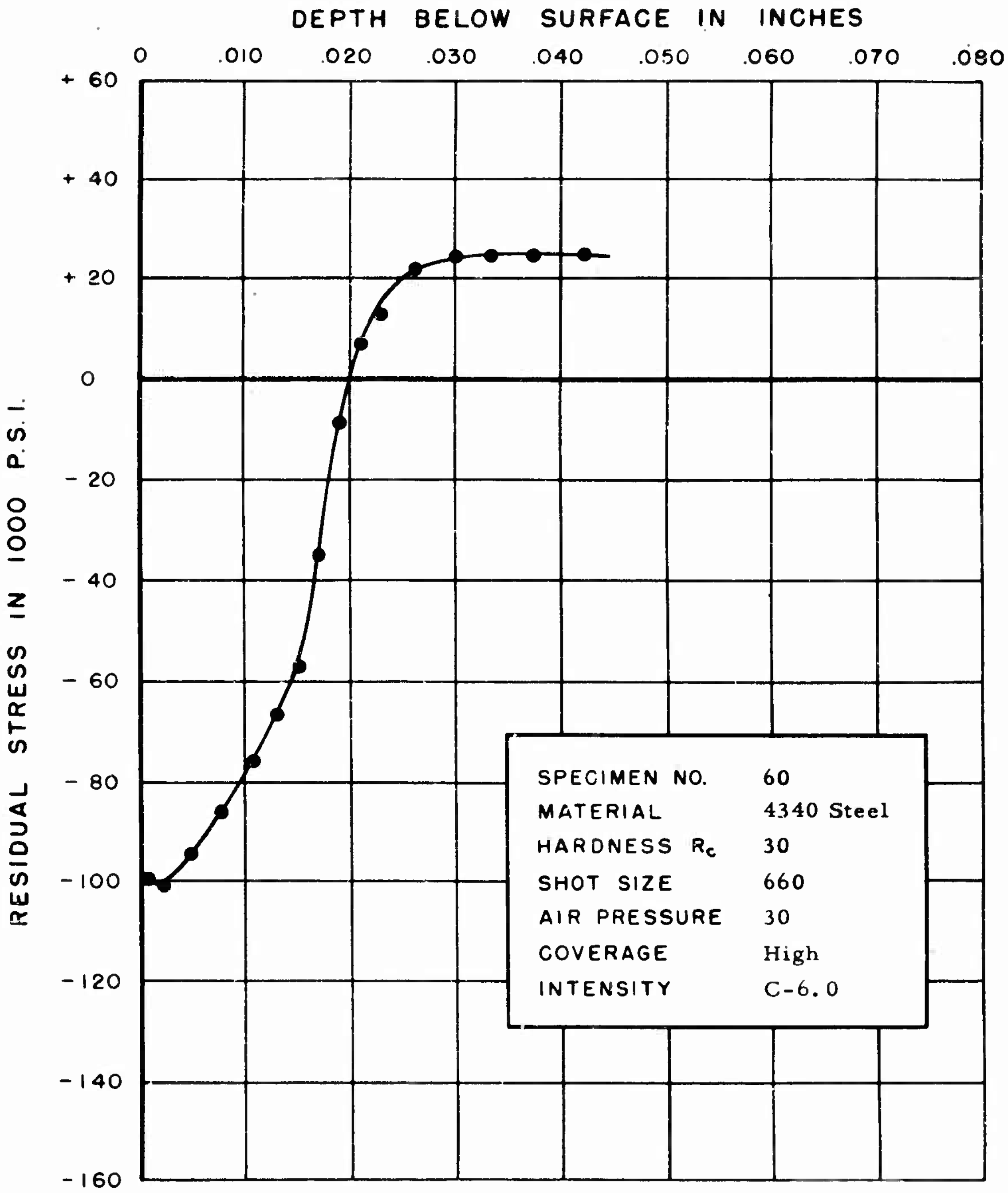

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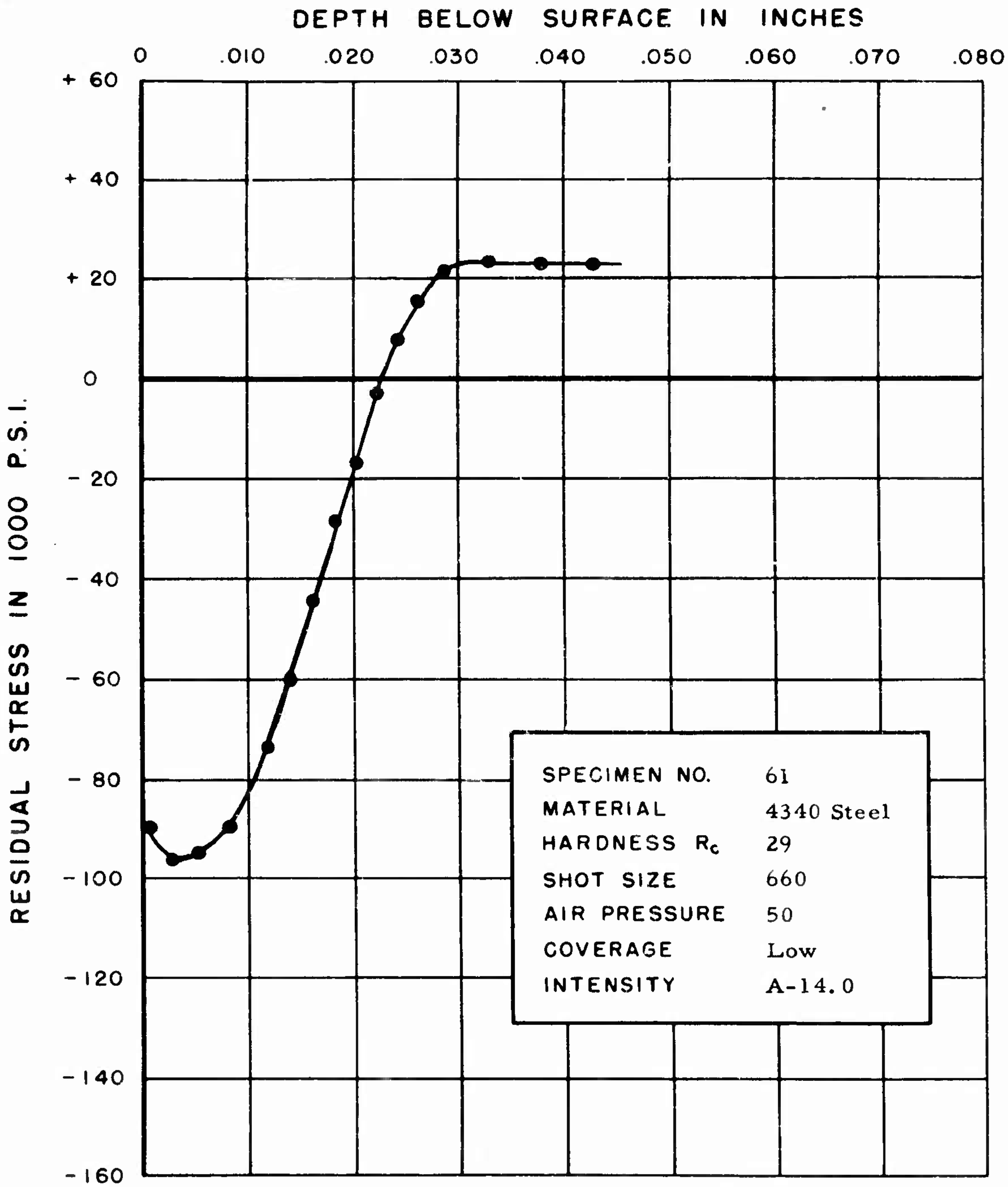


FIGURE 94. RESIDUAL STRESS DISTRIBUTION

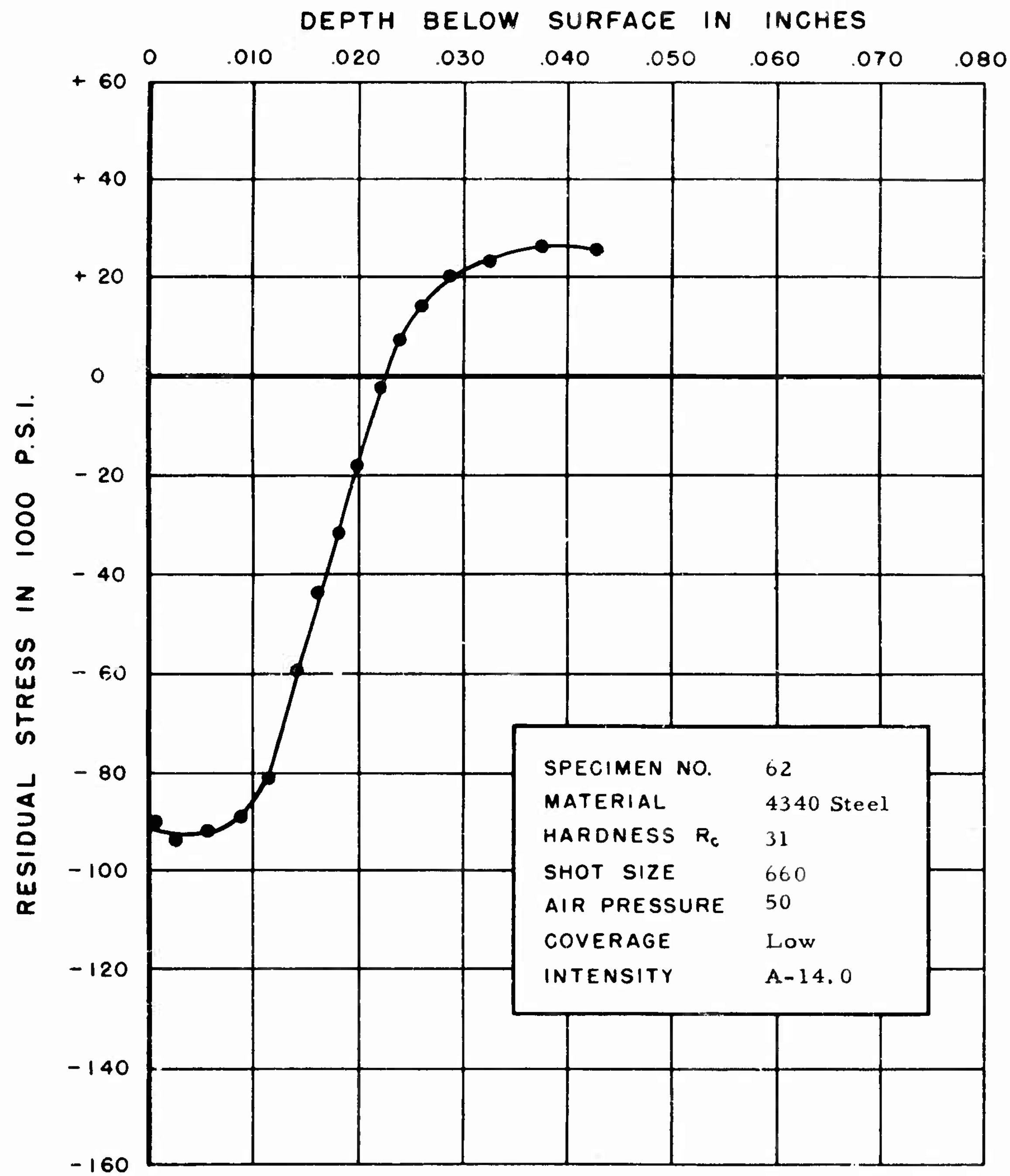
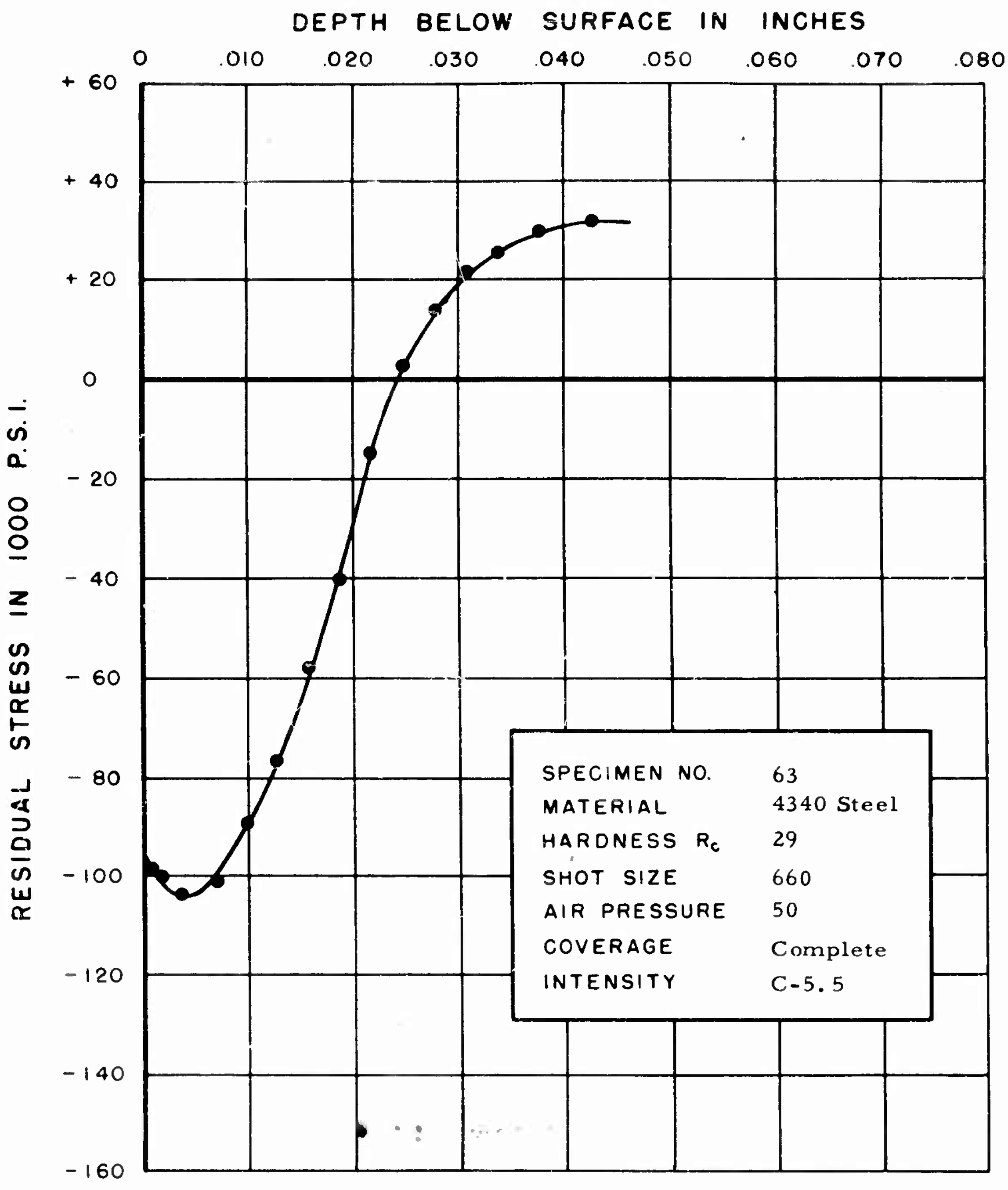


FIGURE 95. RESIDUAL STRESS DISTRIBUTION



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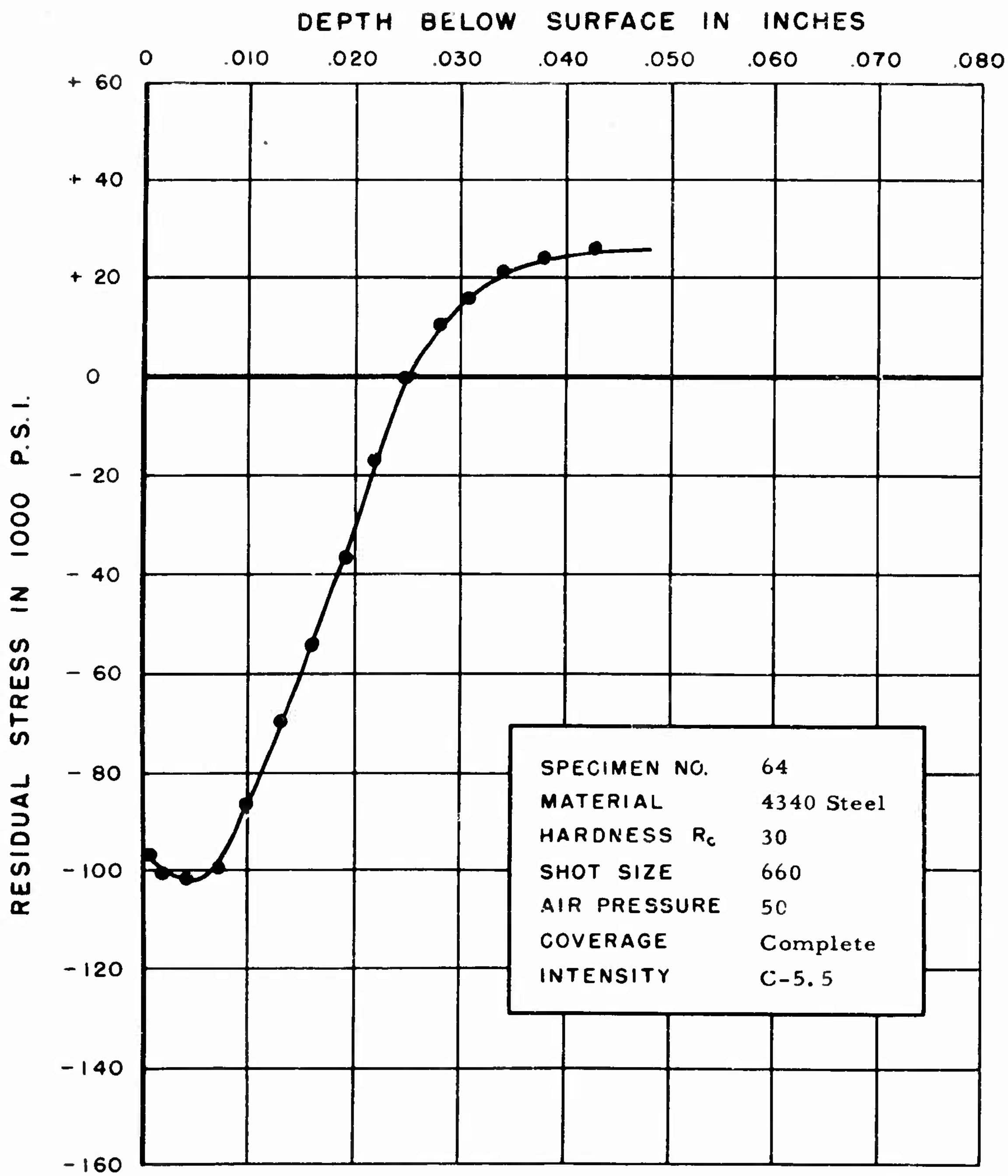

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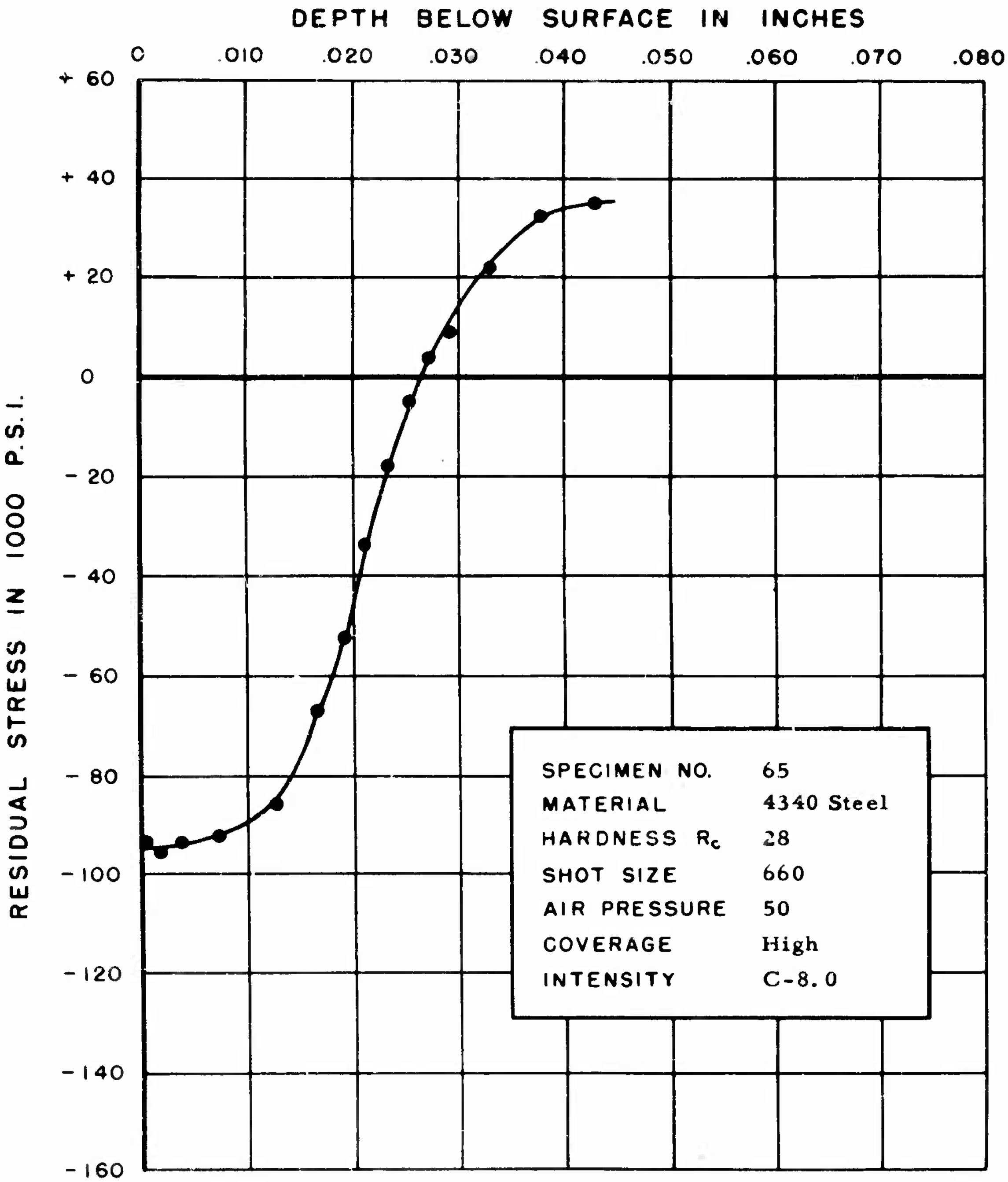
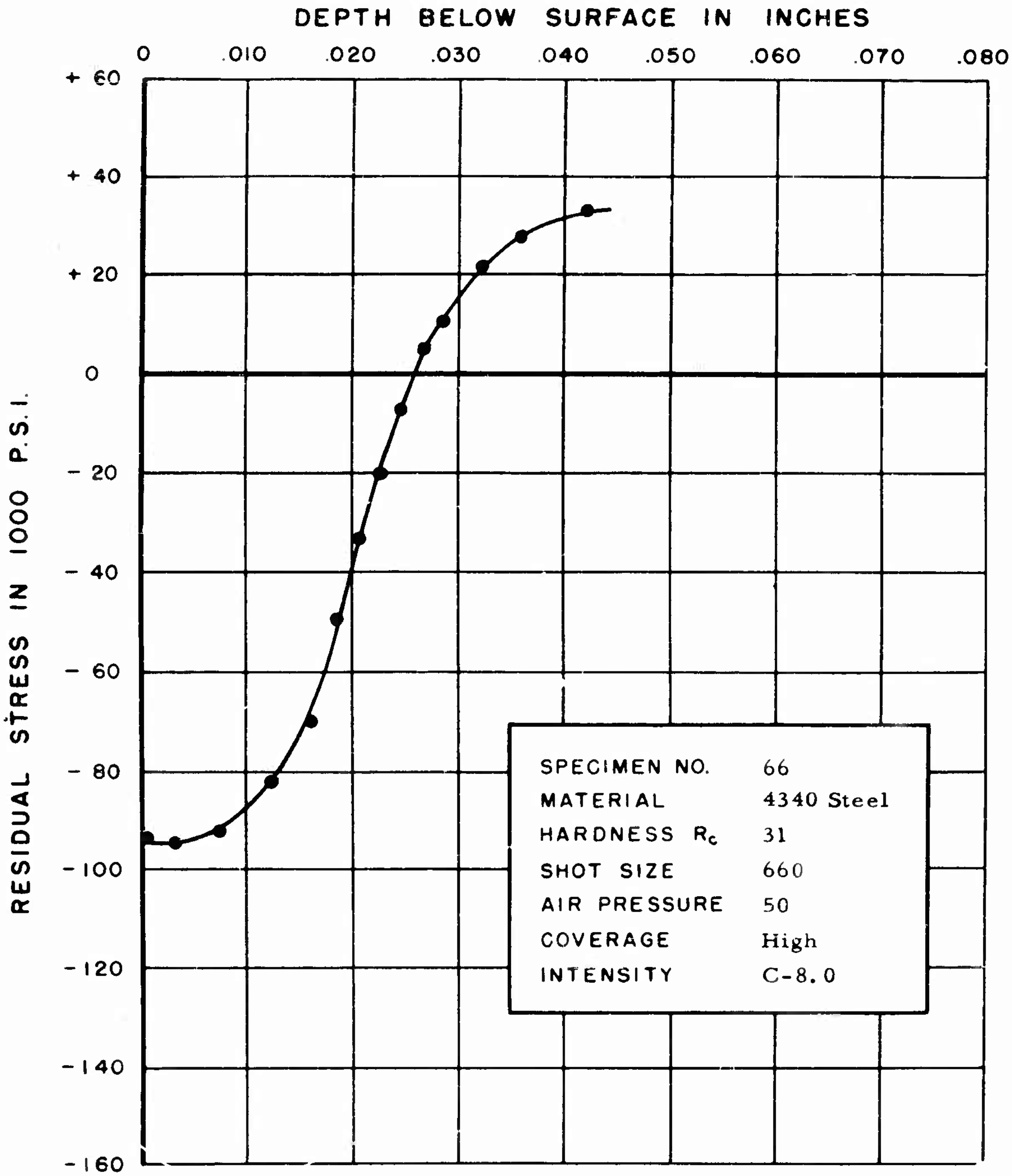


FIGURE 98. RESIDUAL STRESS DISTRIBUTION



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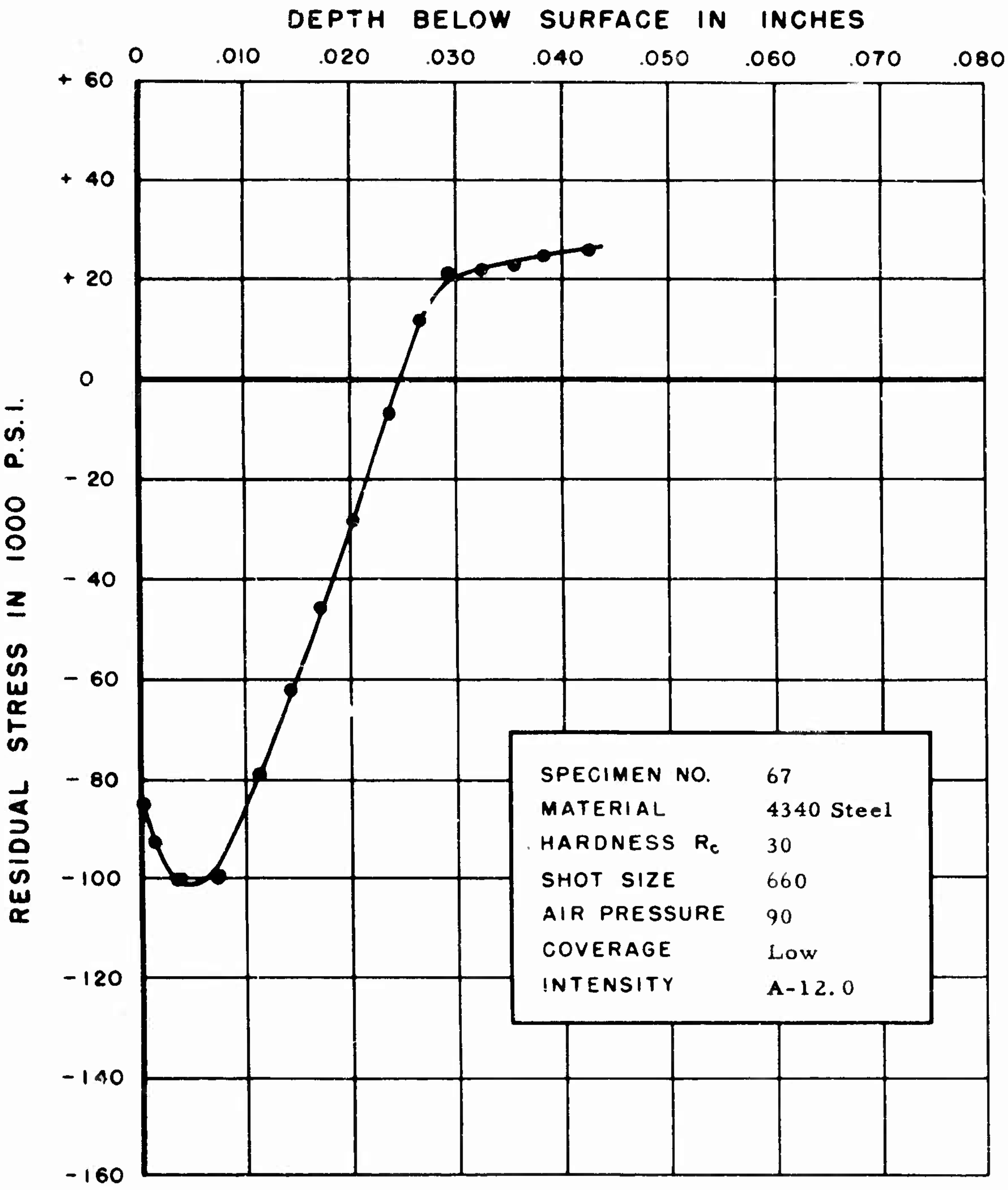
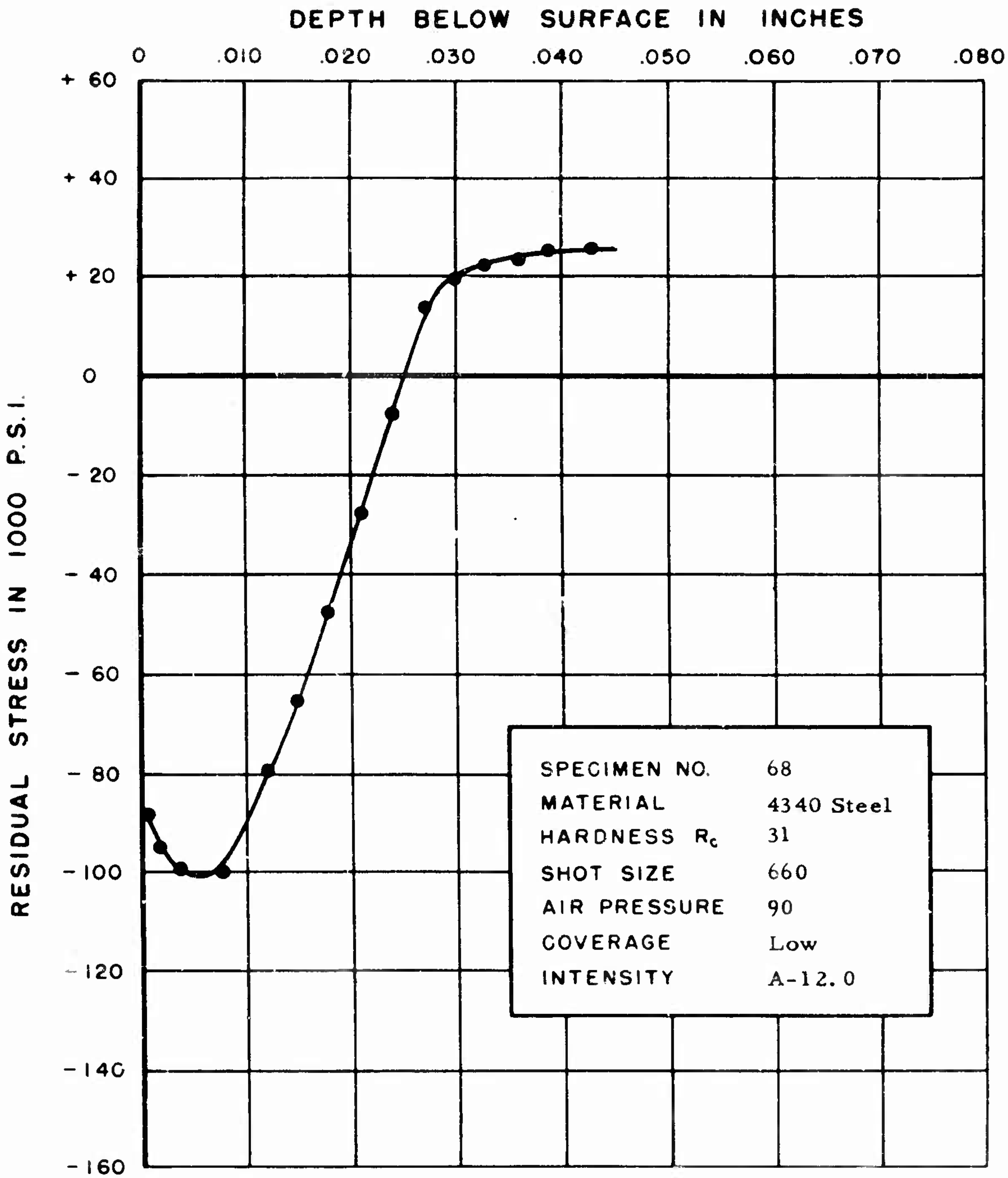


FIGURE 100. RESIDUAL STRESS DISTRIBUTION



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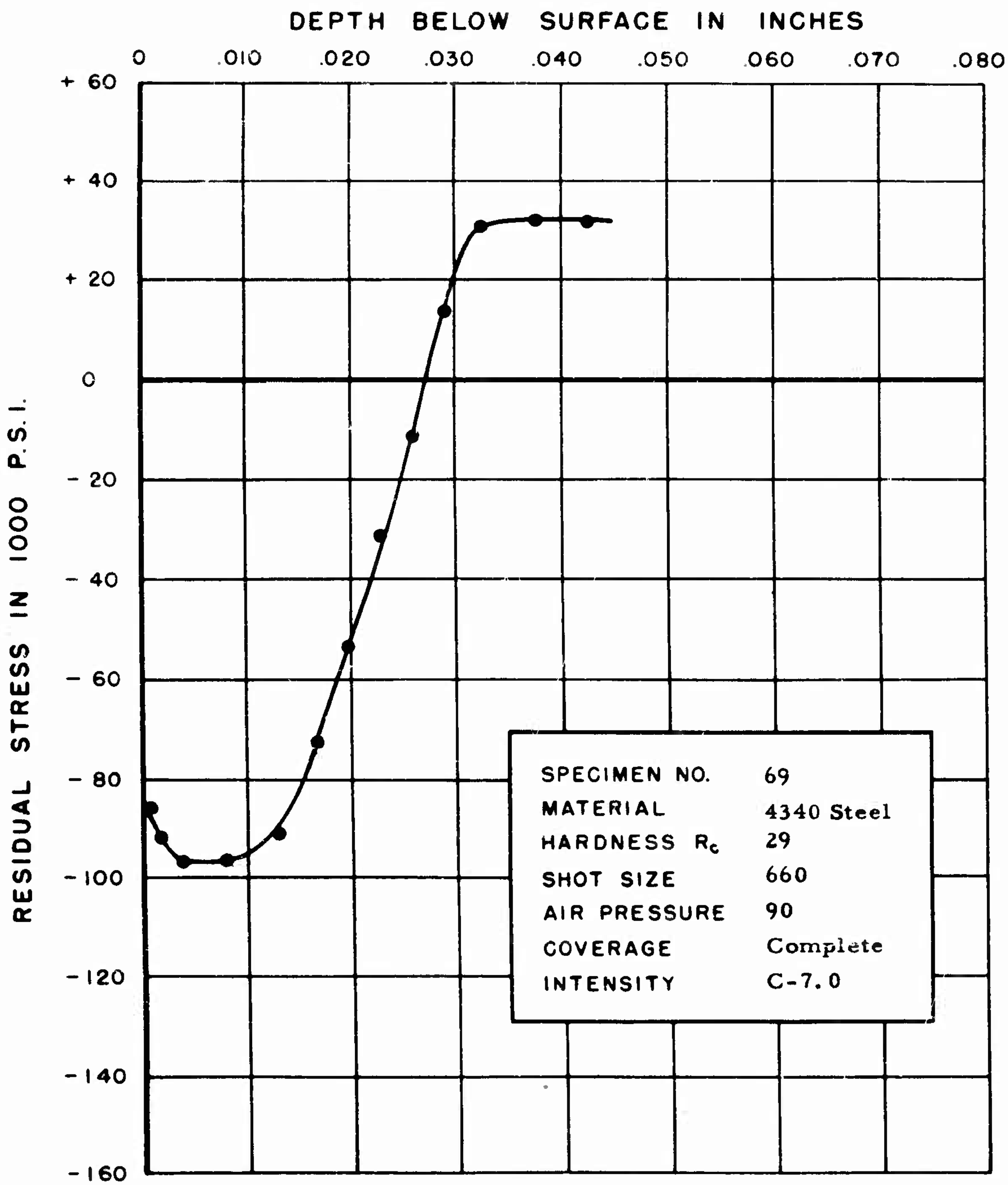


FIGURE 102. RESIDUAL STRESS DISTRIBUTION

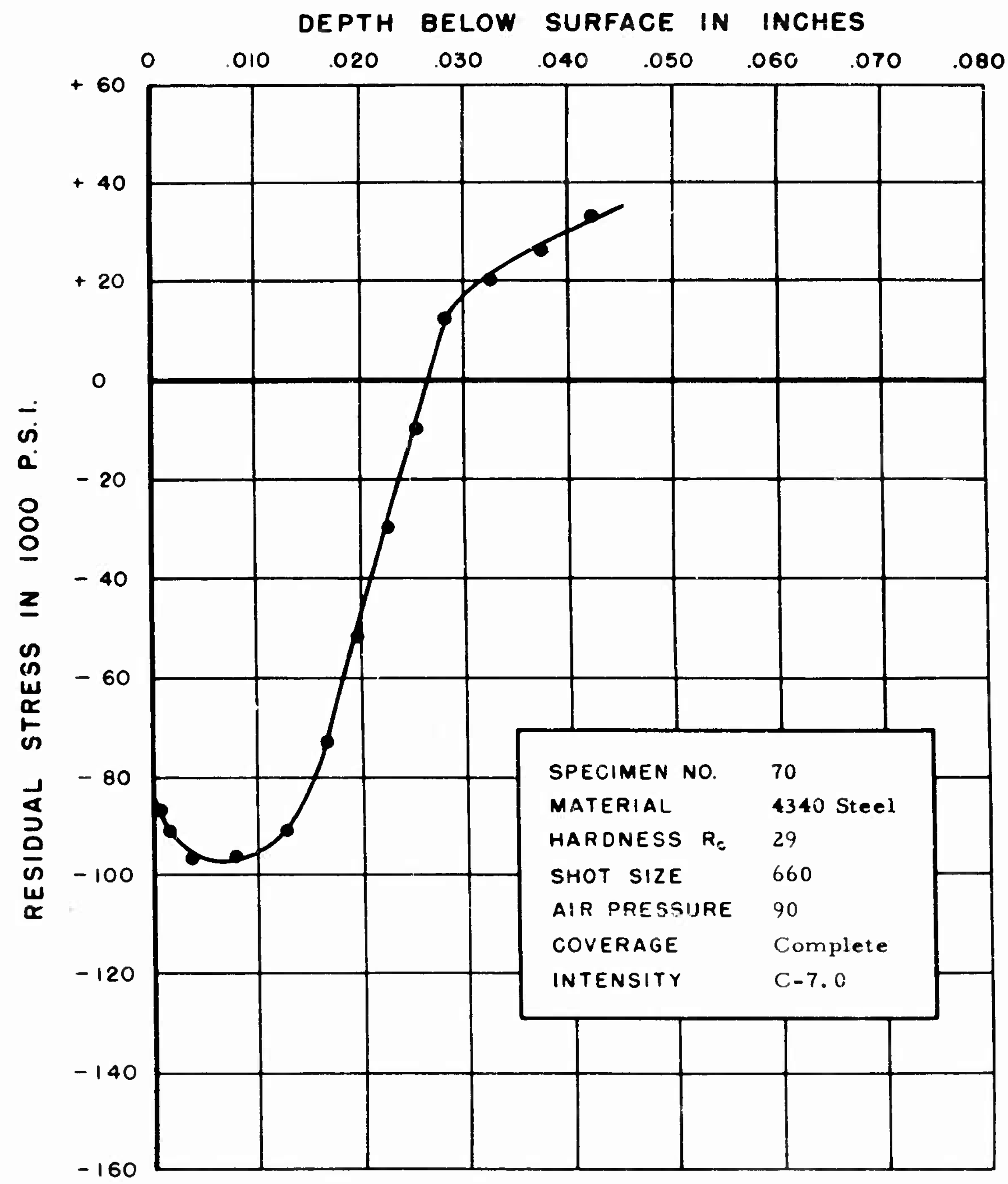


FIGURE 103. RESIDUAL STRESS DISTRIBUTION

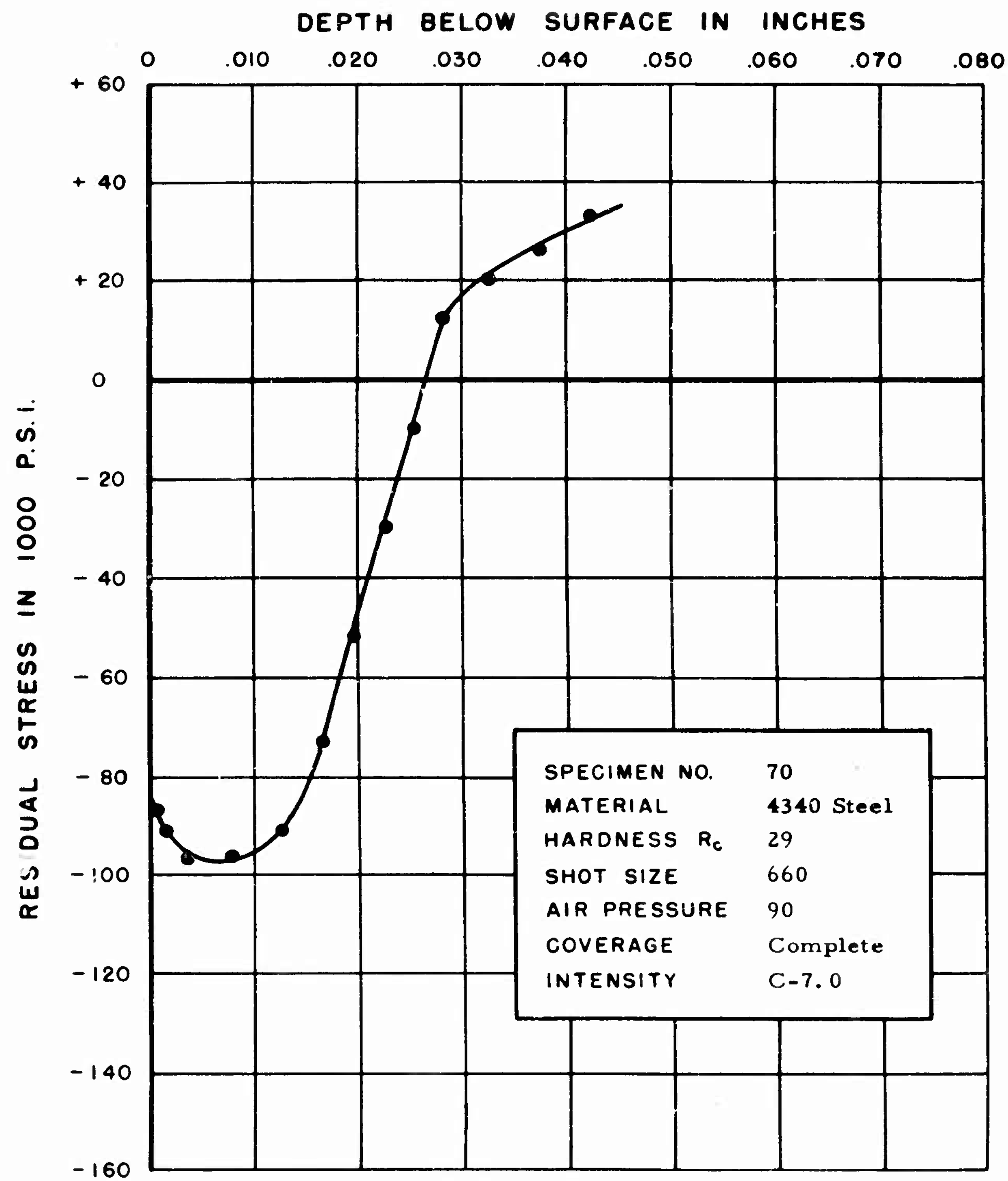
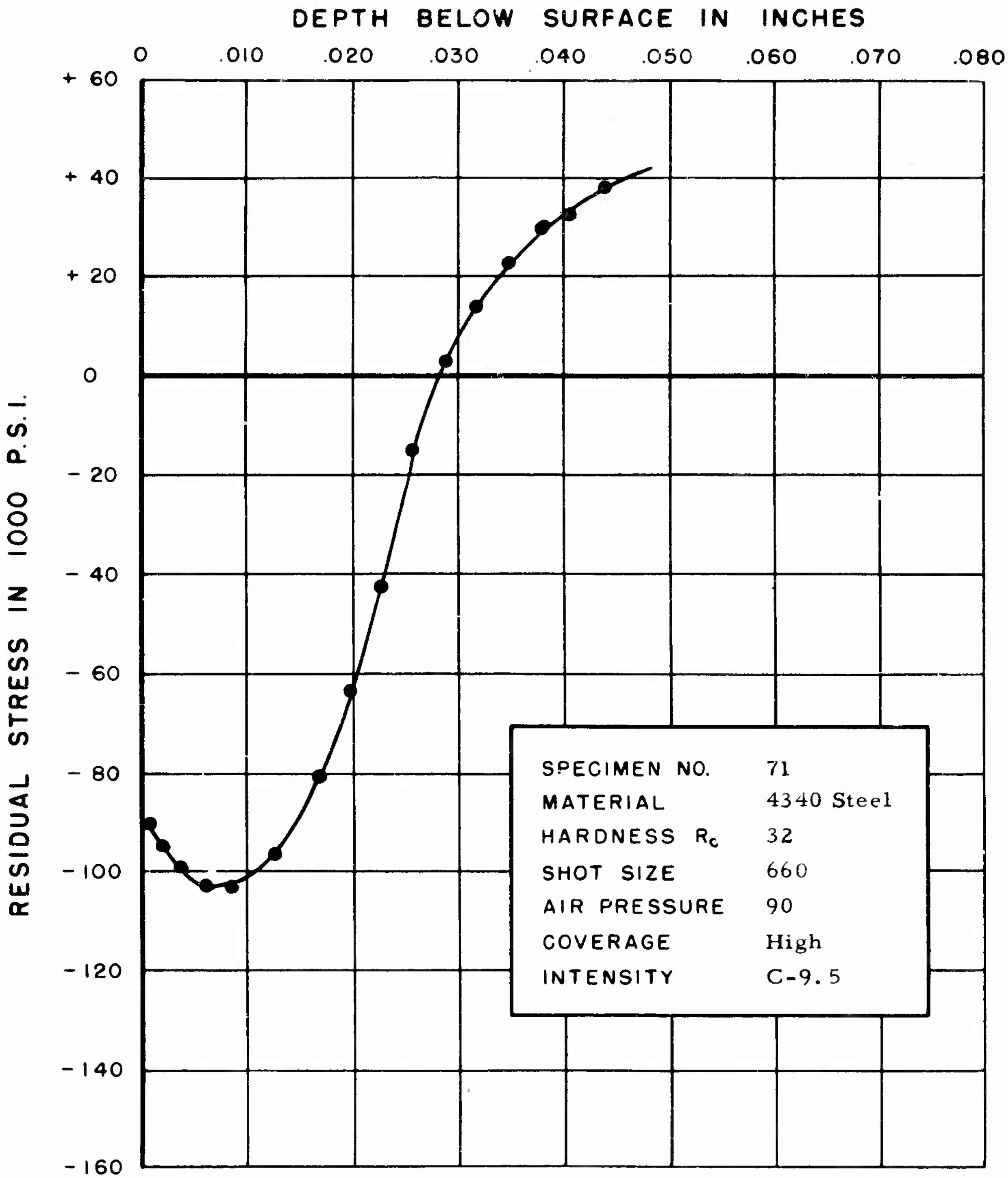


FIGURE 103. RESIDUAL STRESS DISTRIBUTION



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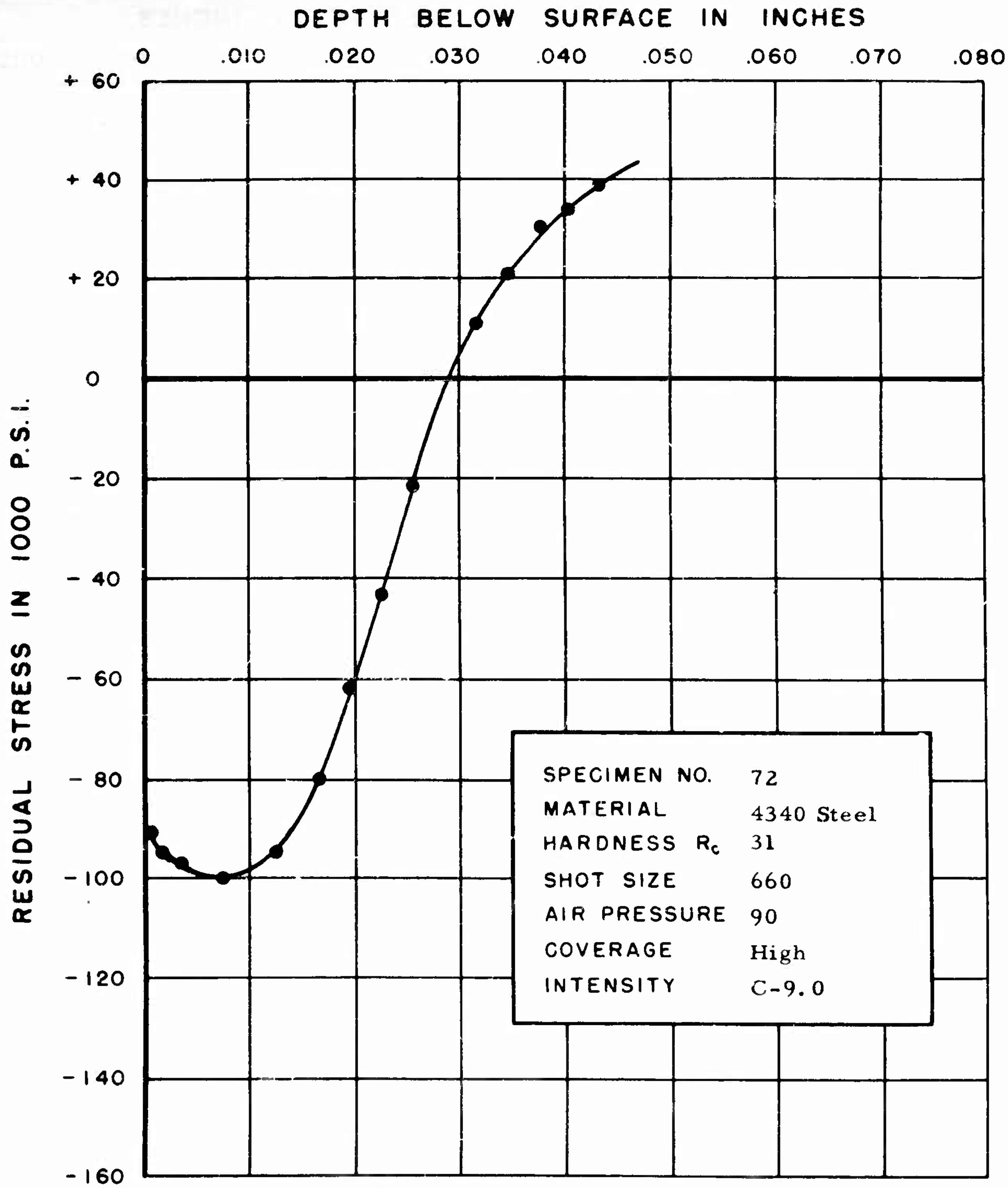


FIGURE 105. RESIDUAL STRESS DISTRIBUTION

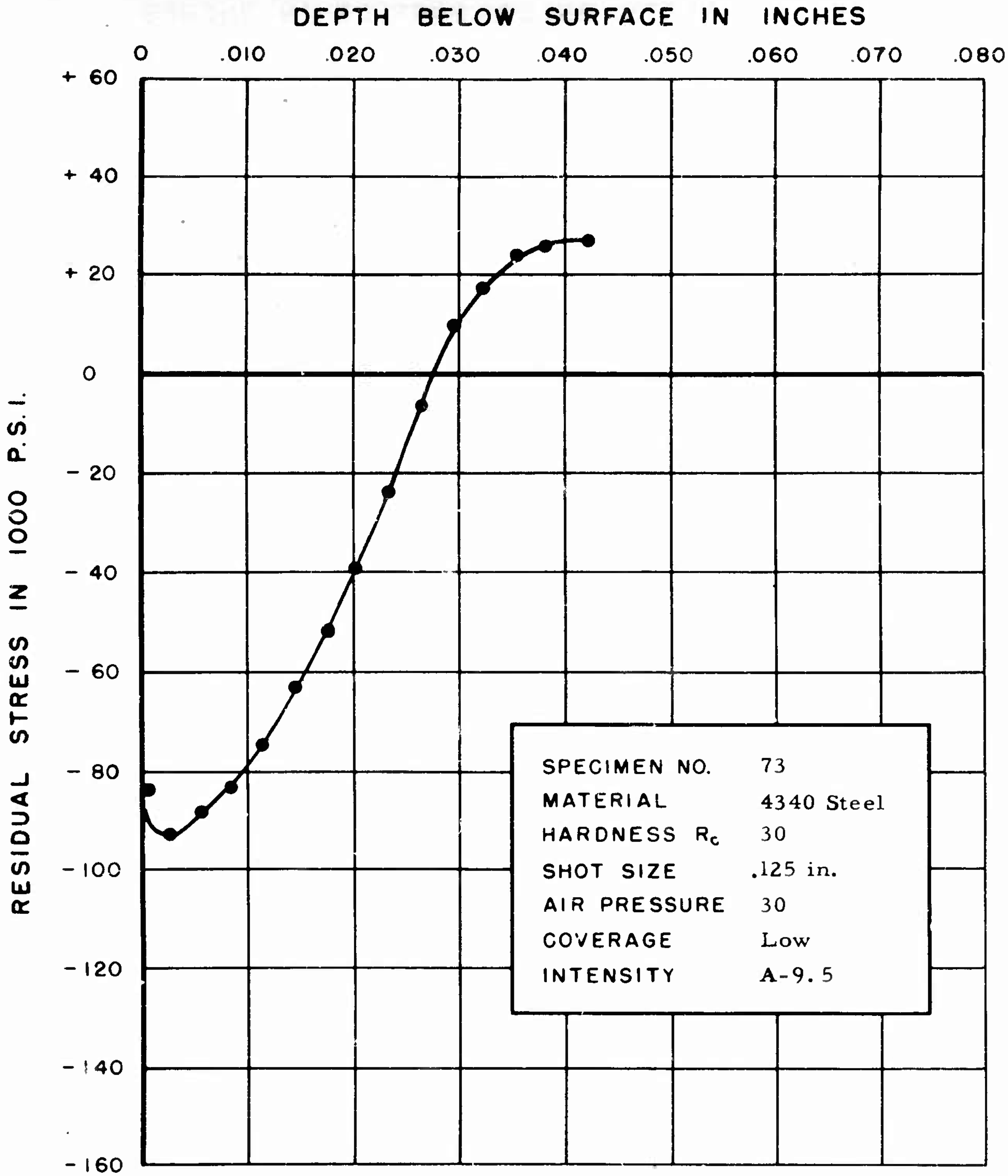


FIGURE 106. RESIDUAL STRESS DISTRIBUTION

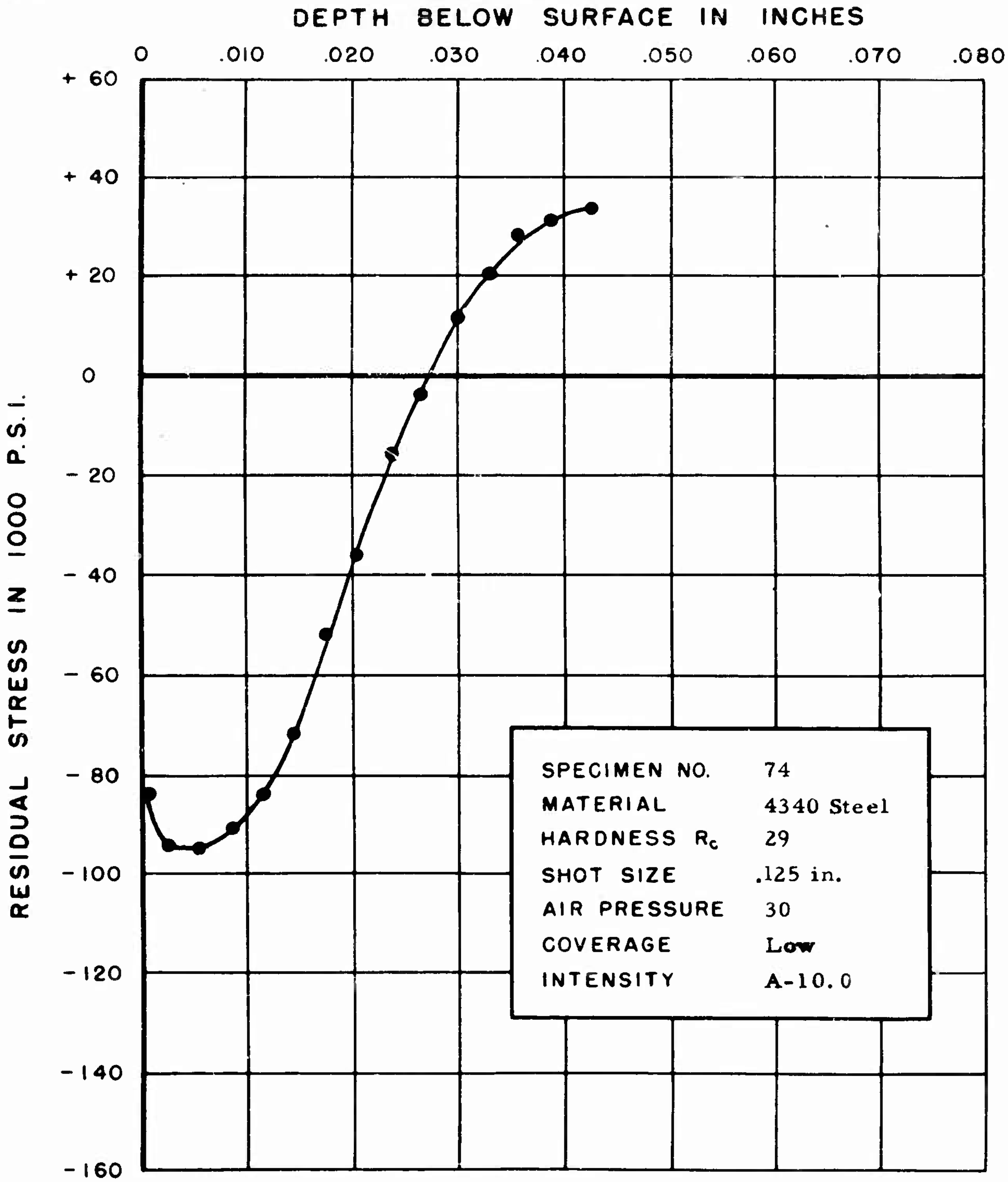


FIGURE 107. RESIDUAL STRESS DISTRIBUTION

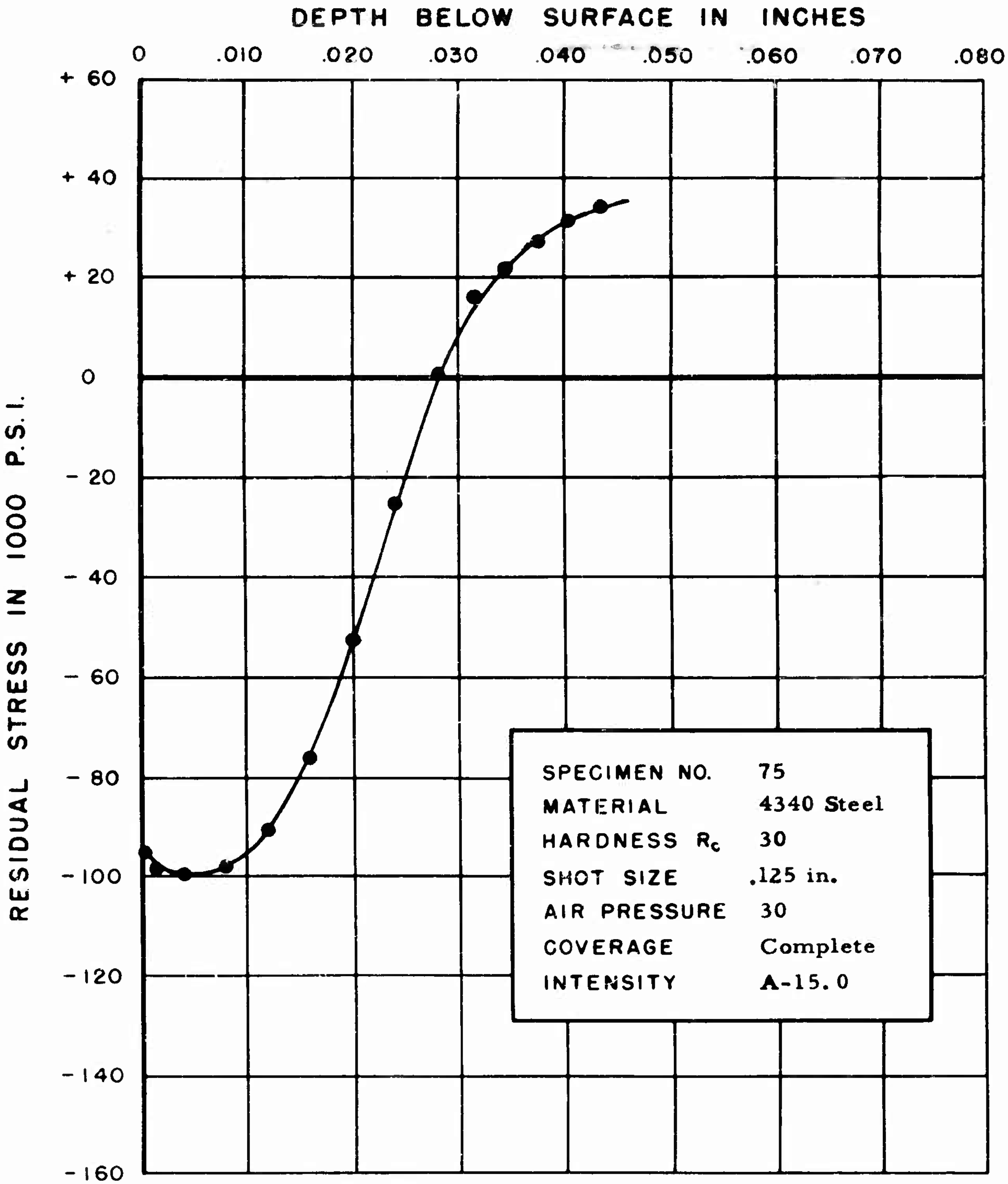
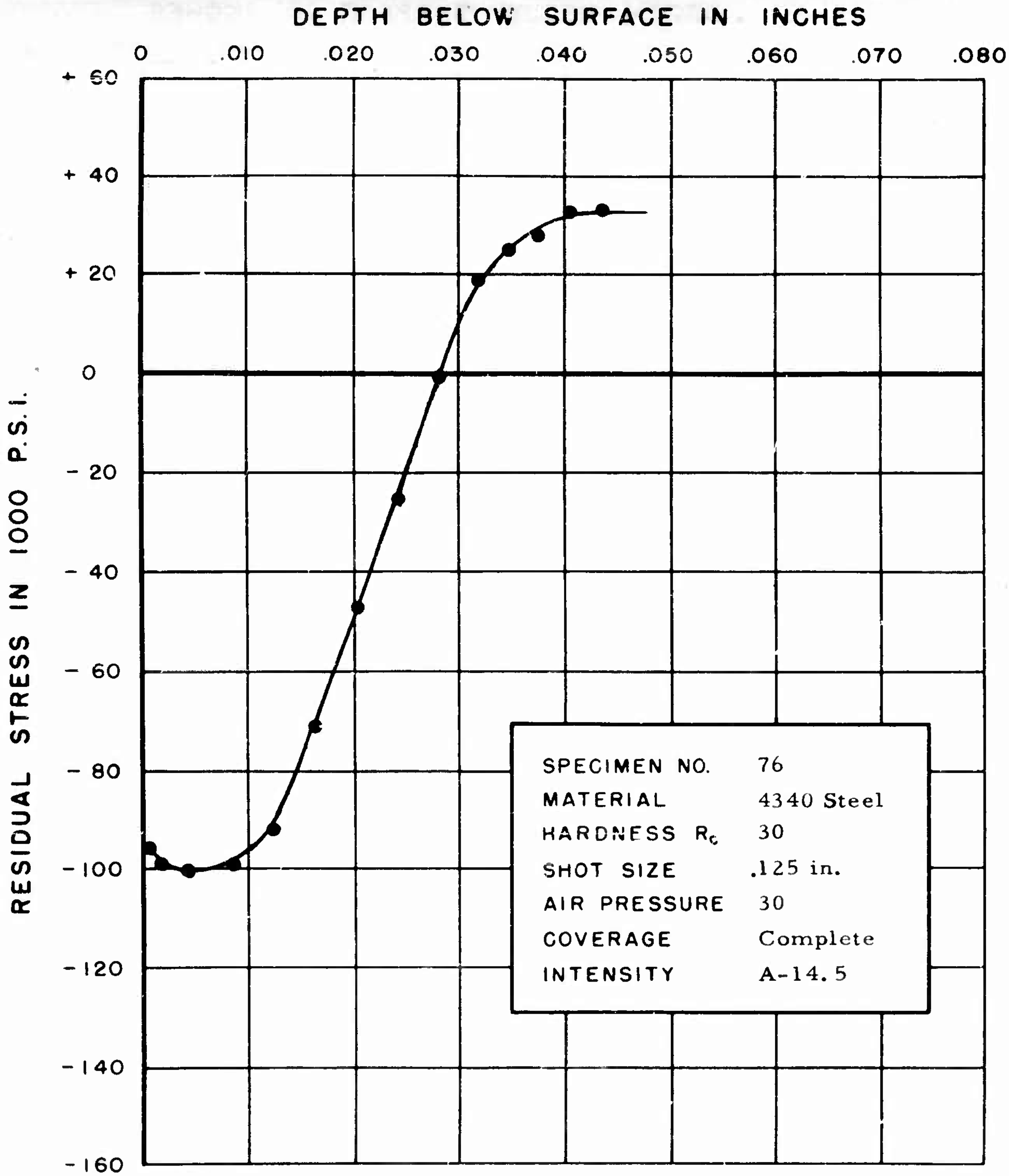


FIGURE 108. RESIDUAL STRESS DISTRIBUTION



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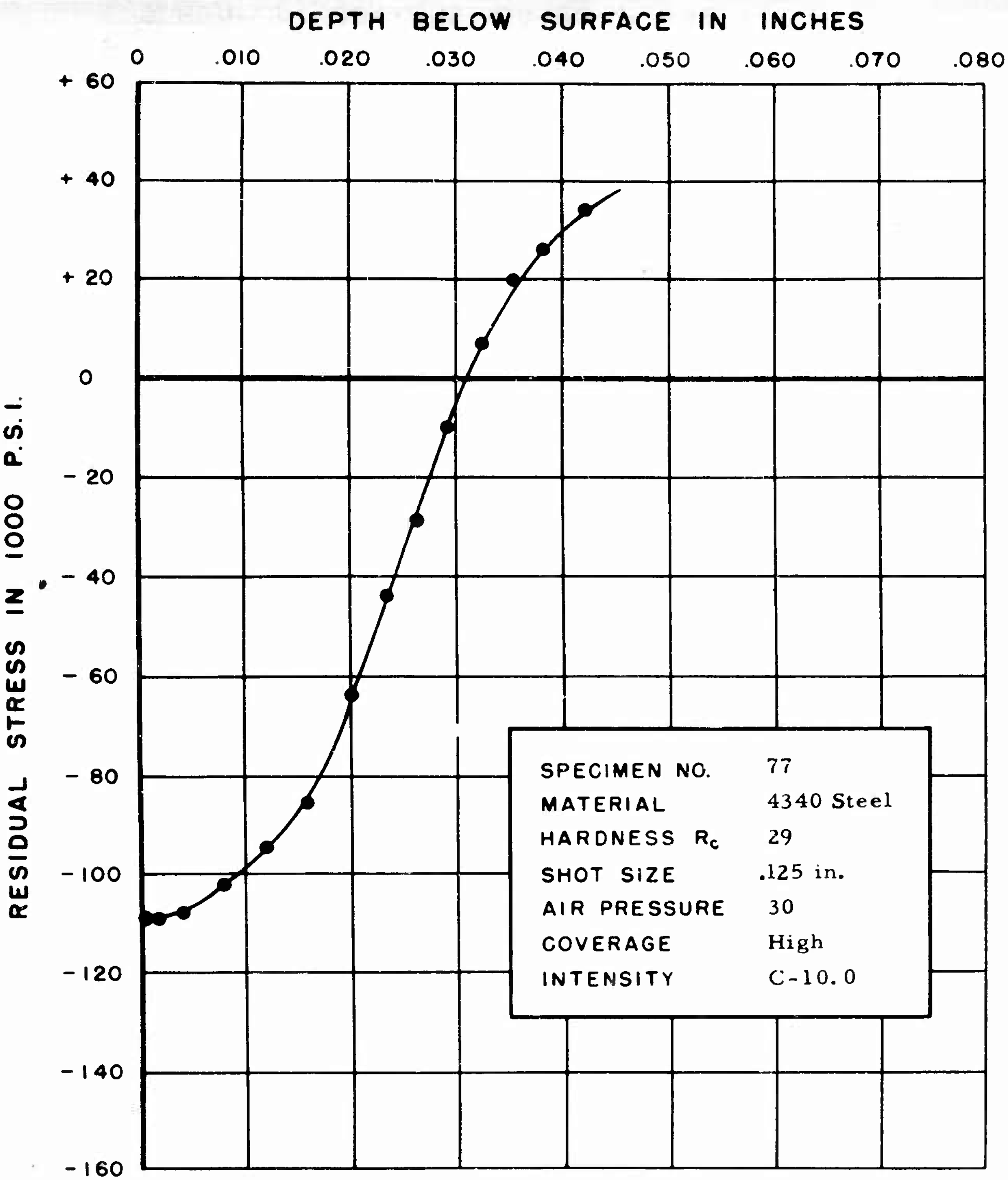

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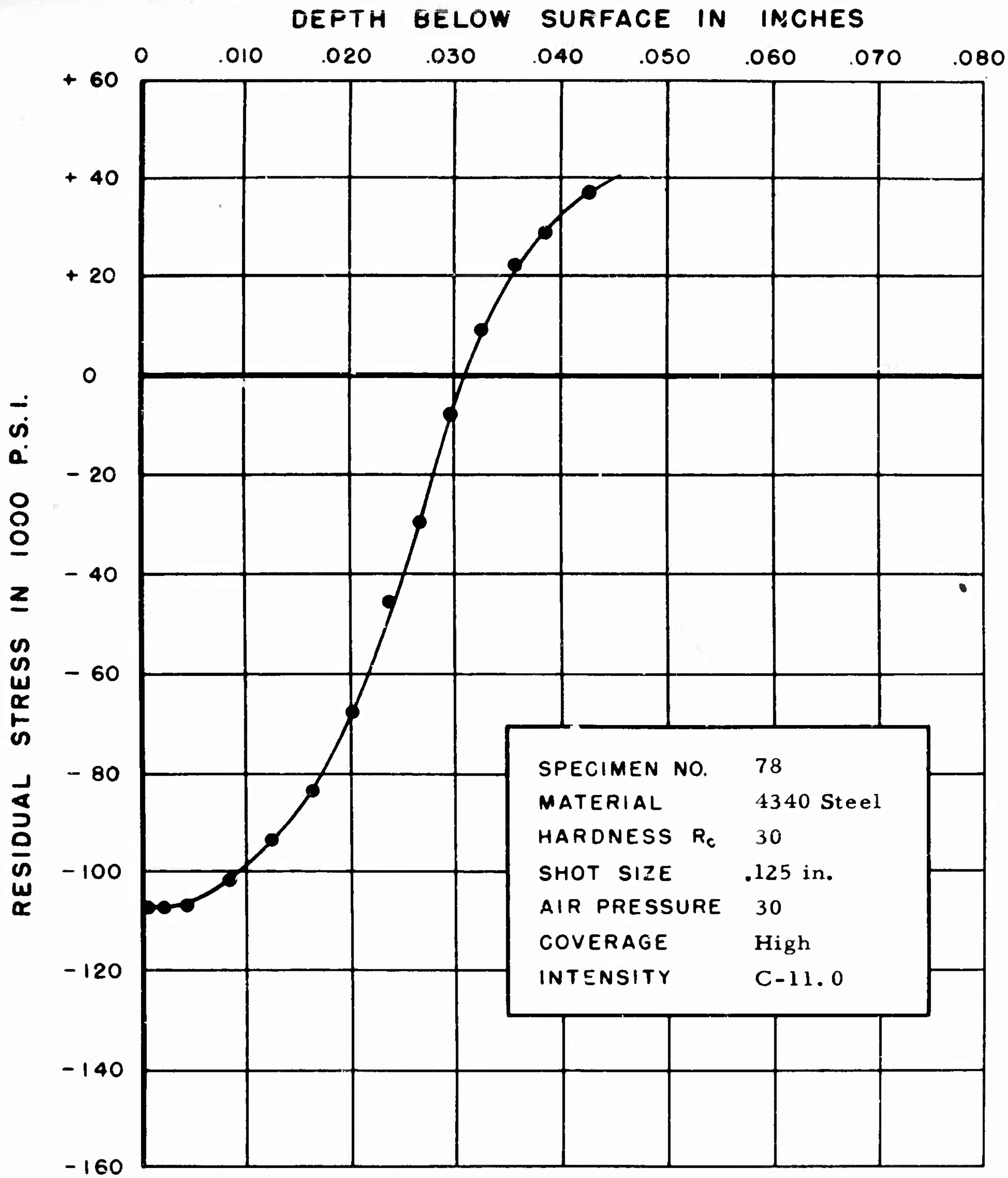


FIGURE III. RESIDUAL STRESS DISTRIBUTION

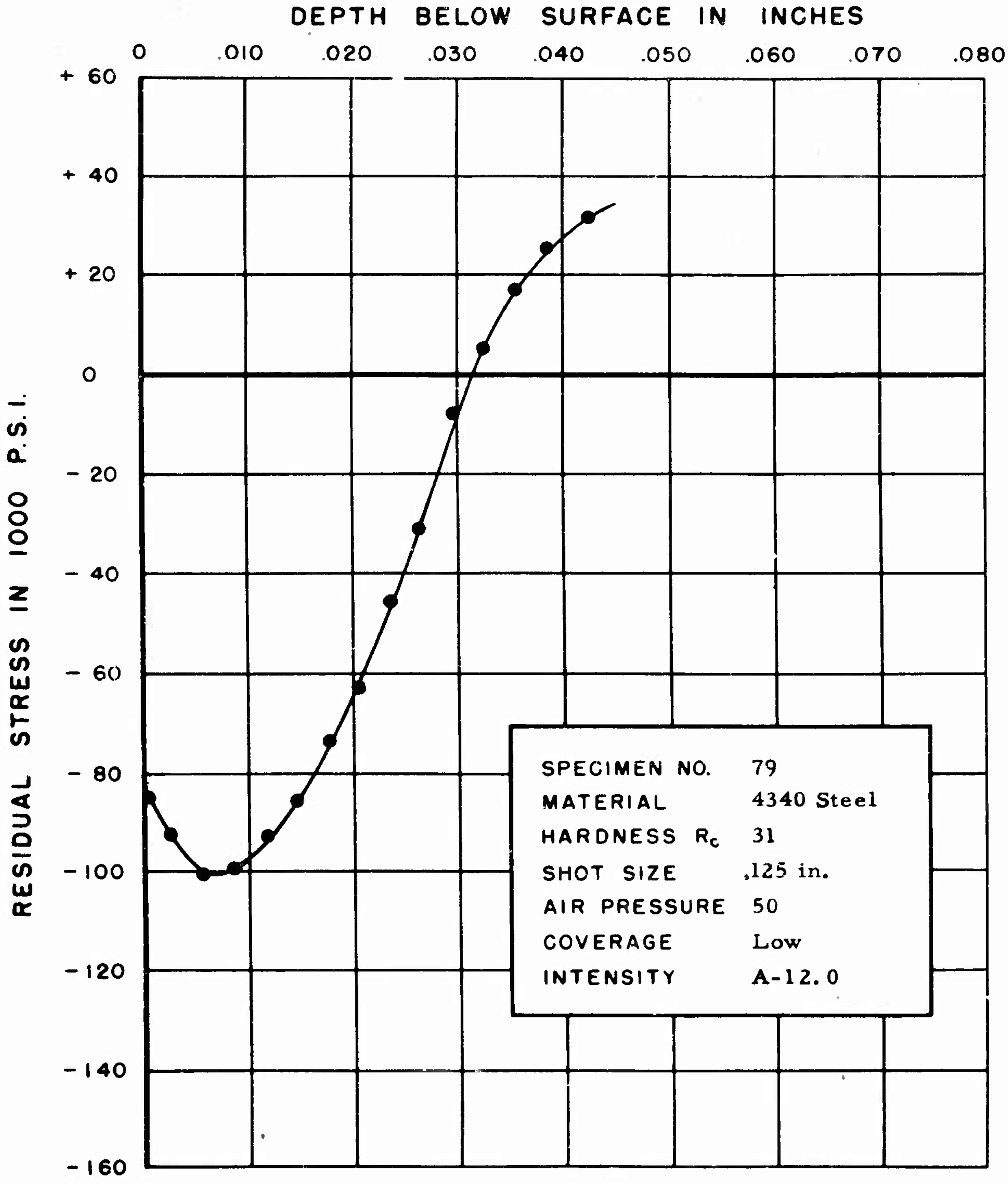
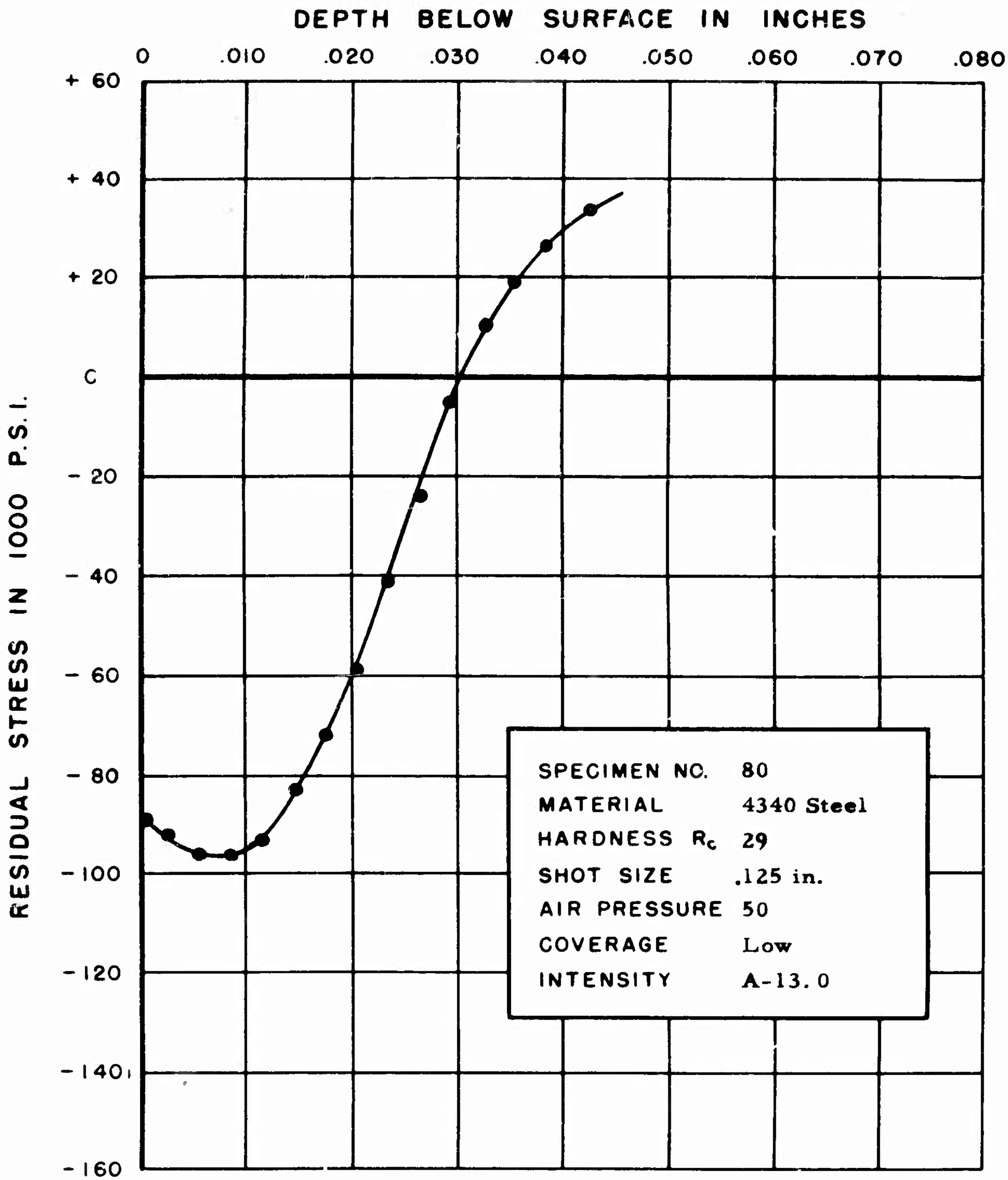


FIGURE 112. RESIDUAL STRESS DISTRIBUTION



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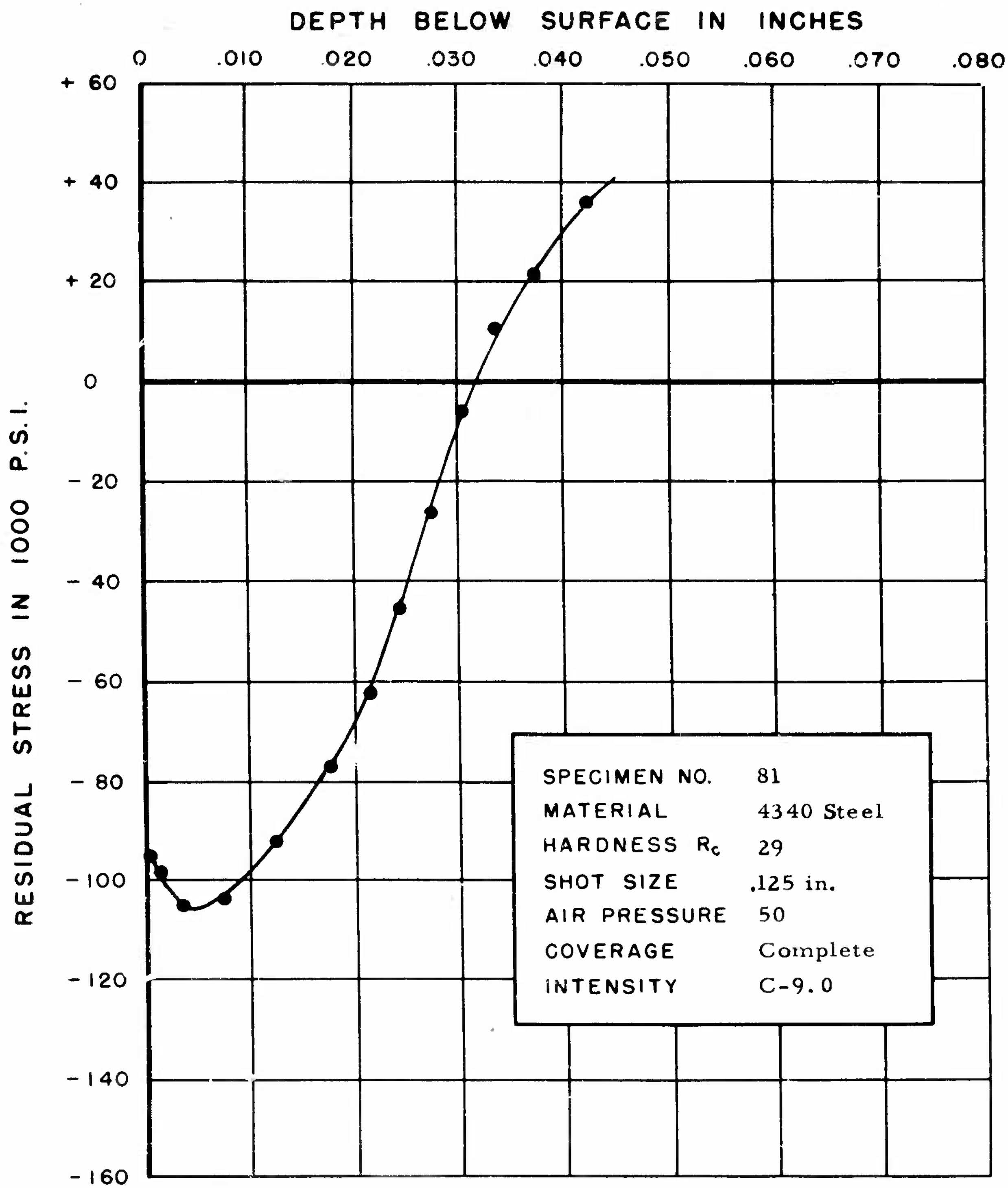

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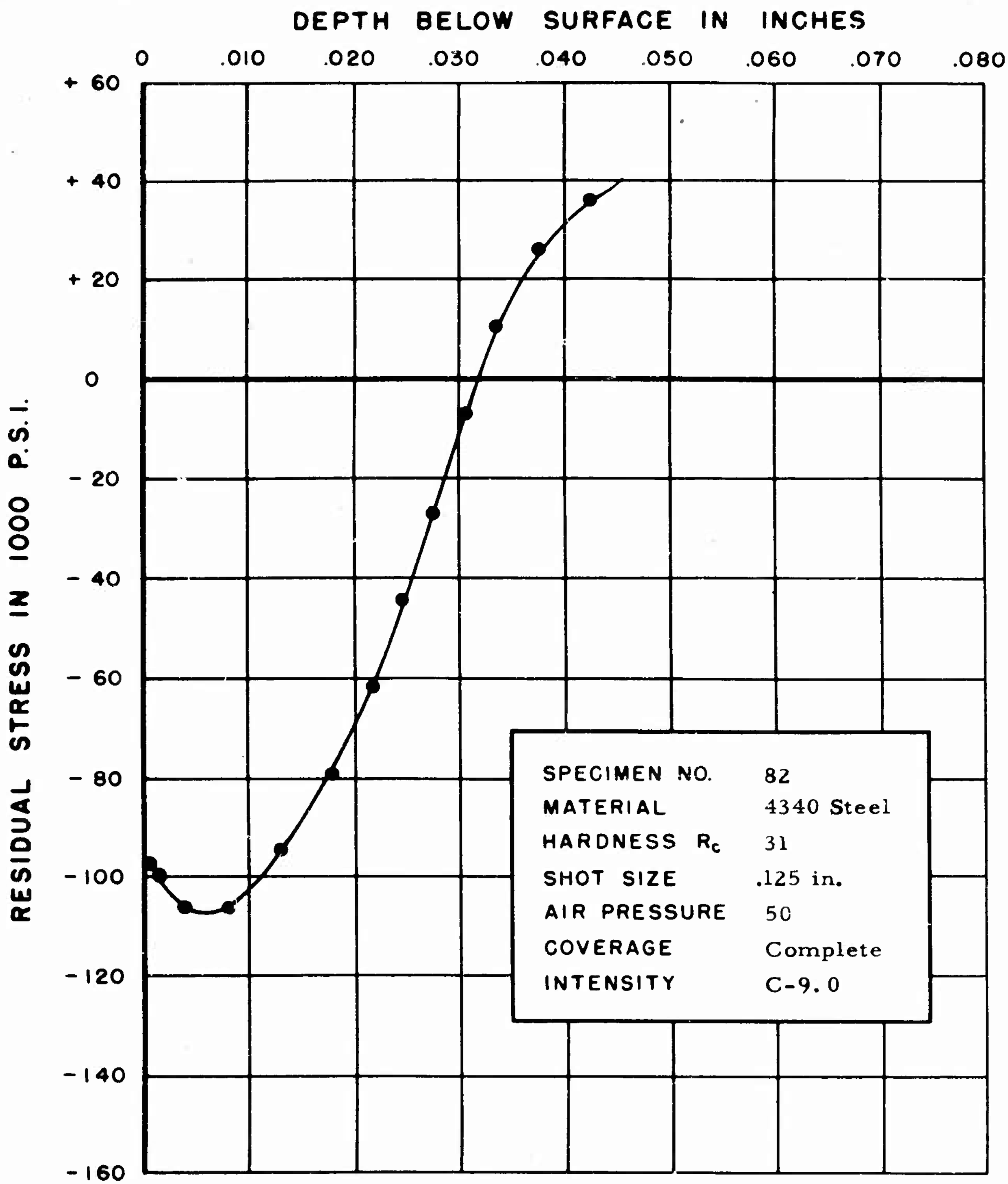
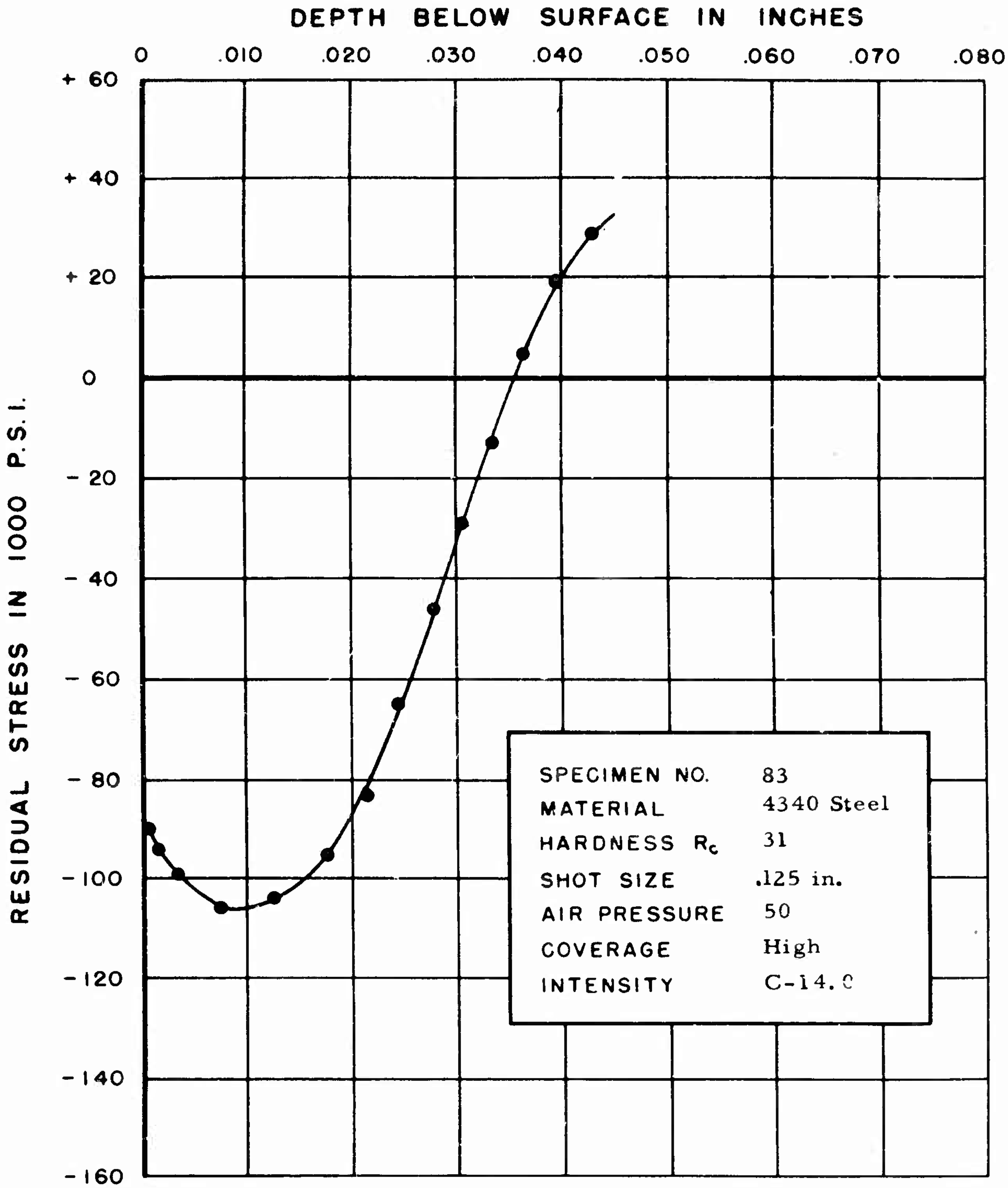


FIGURE 115. RESIDUAL STRESS DISTRIBUTION



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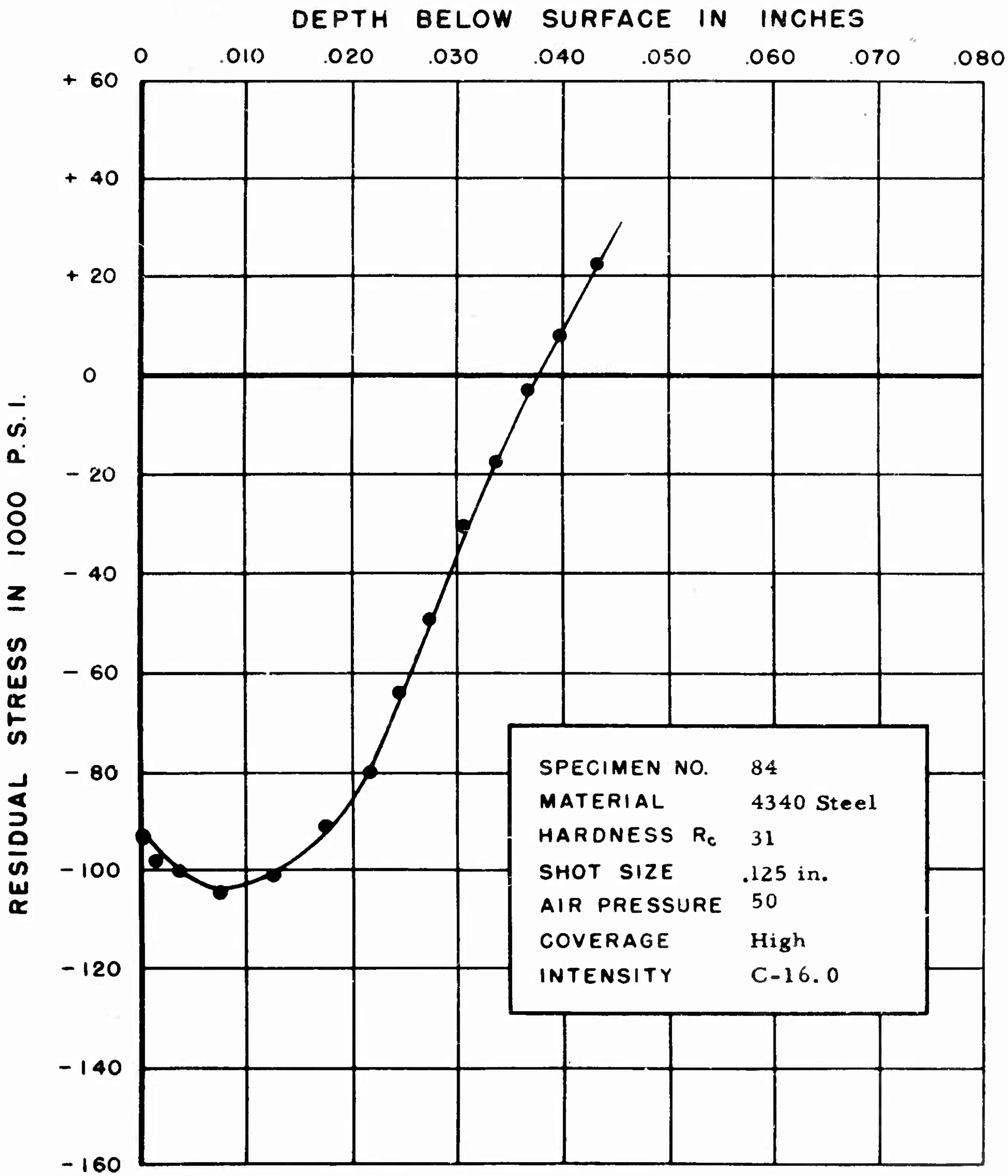

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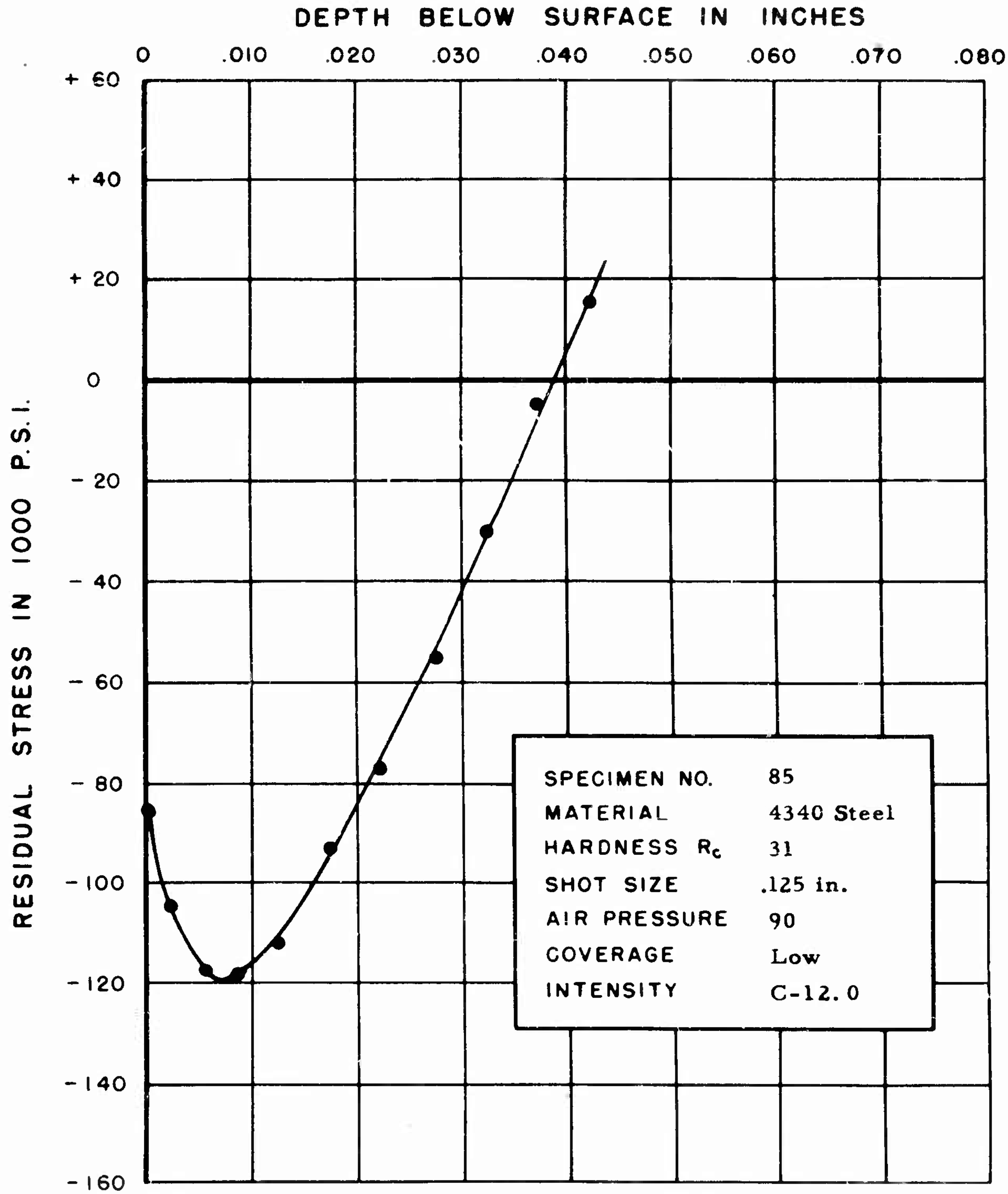

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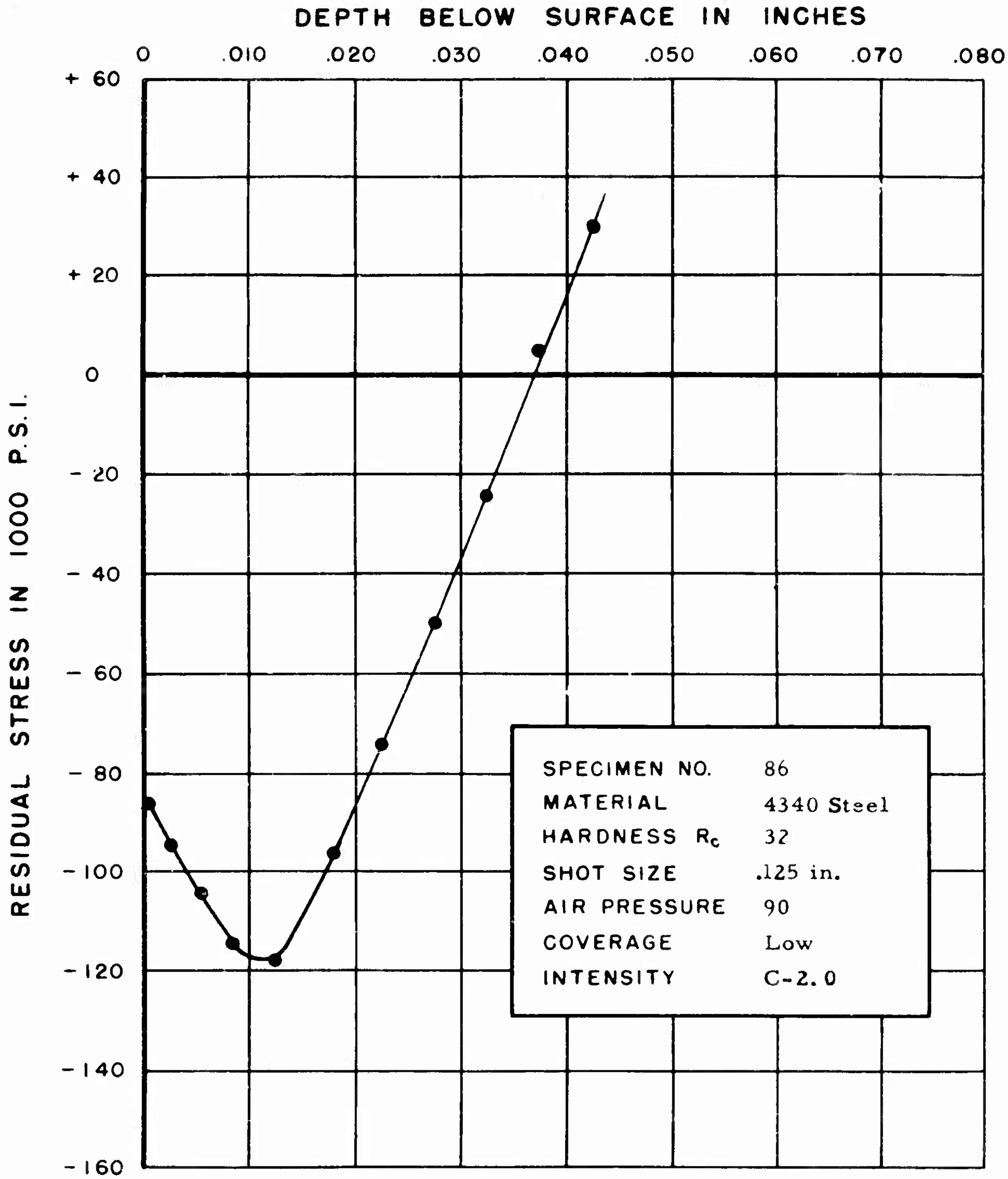

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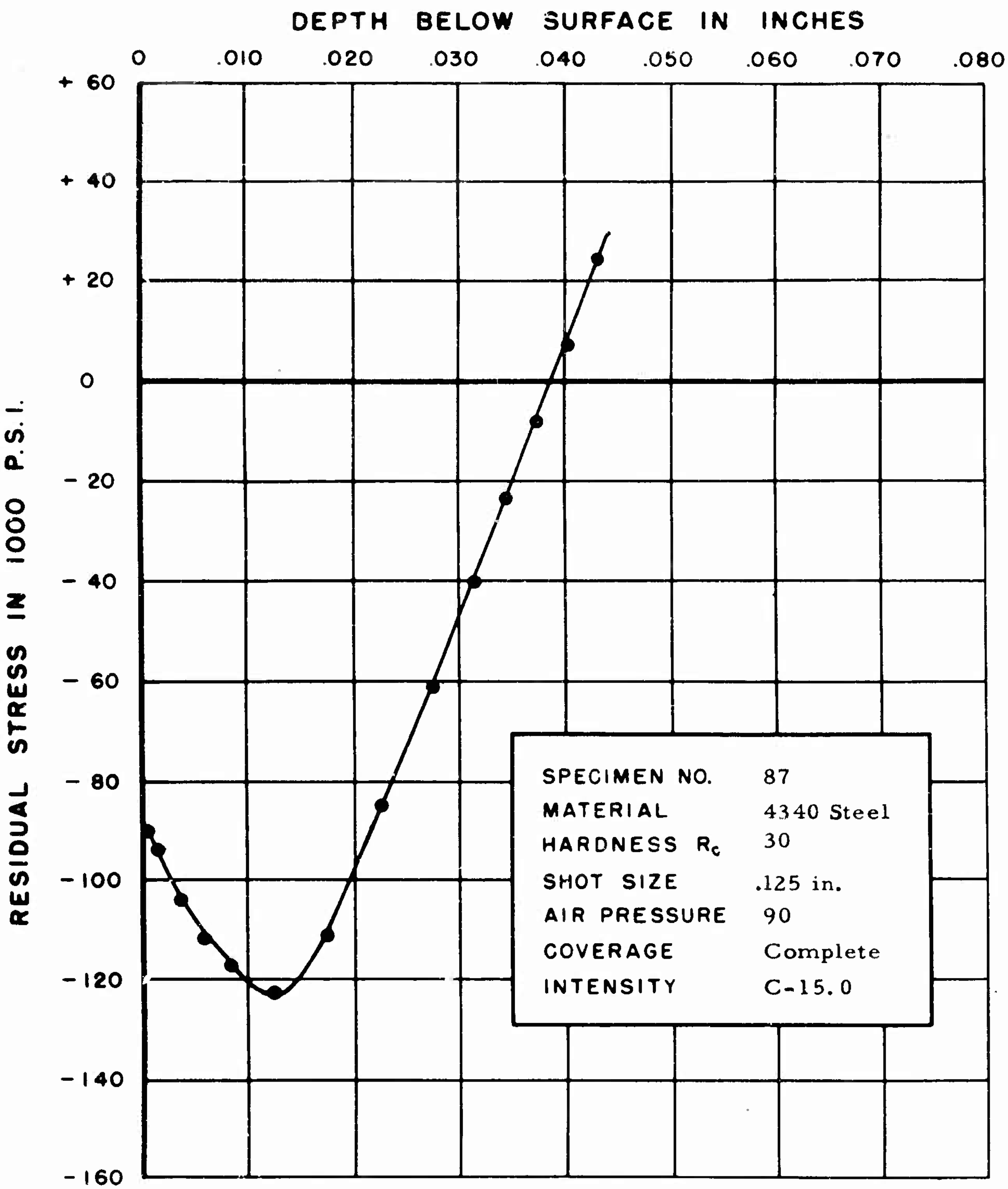

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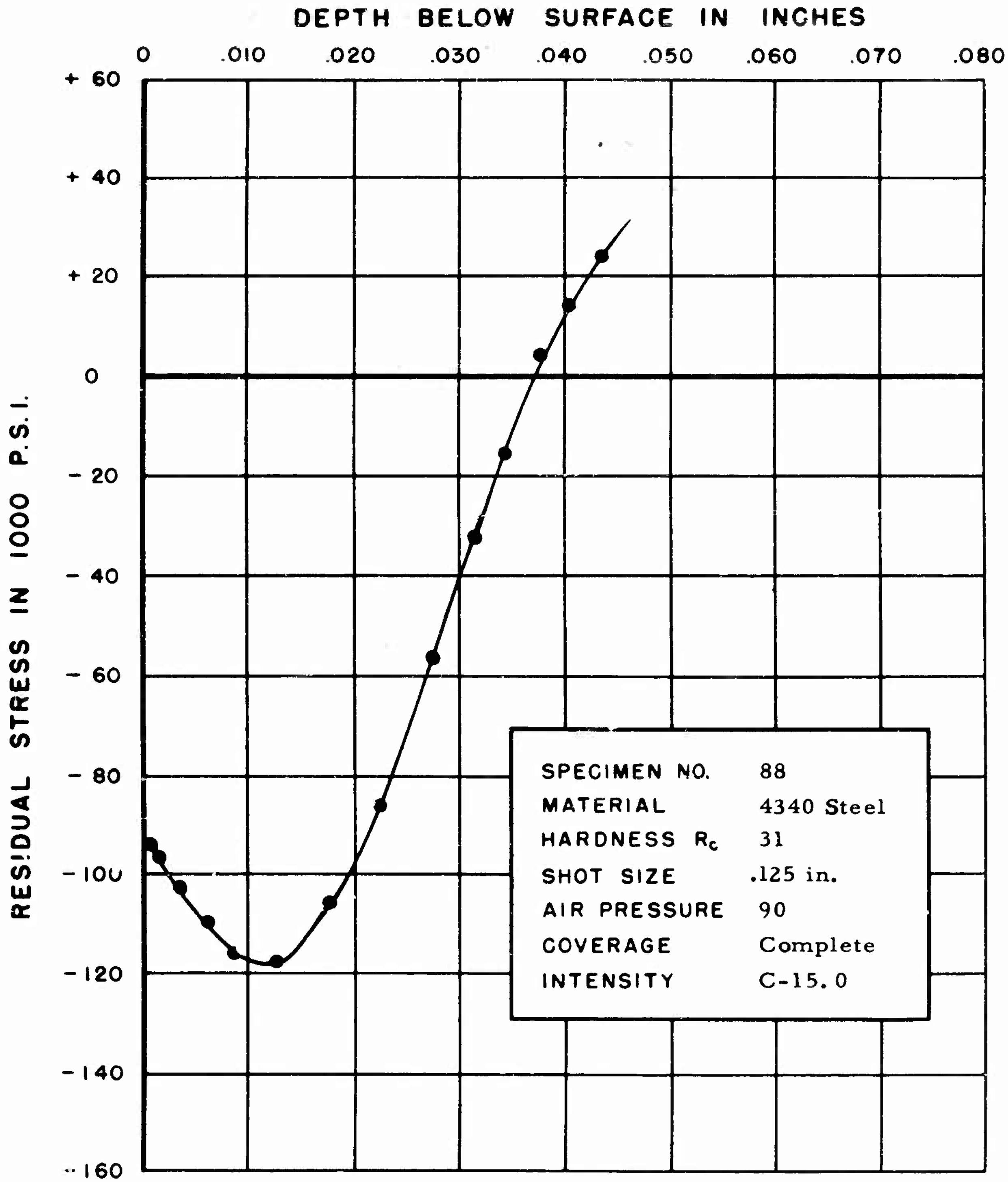

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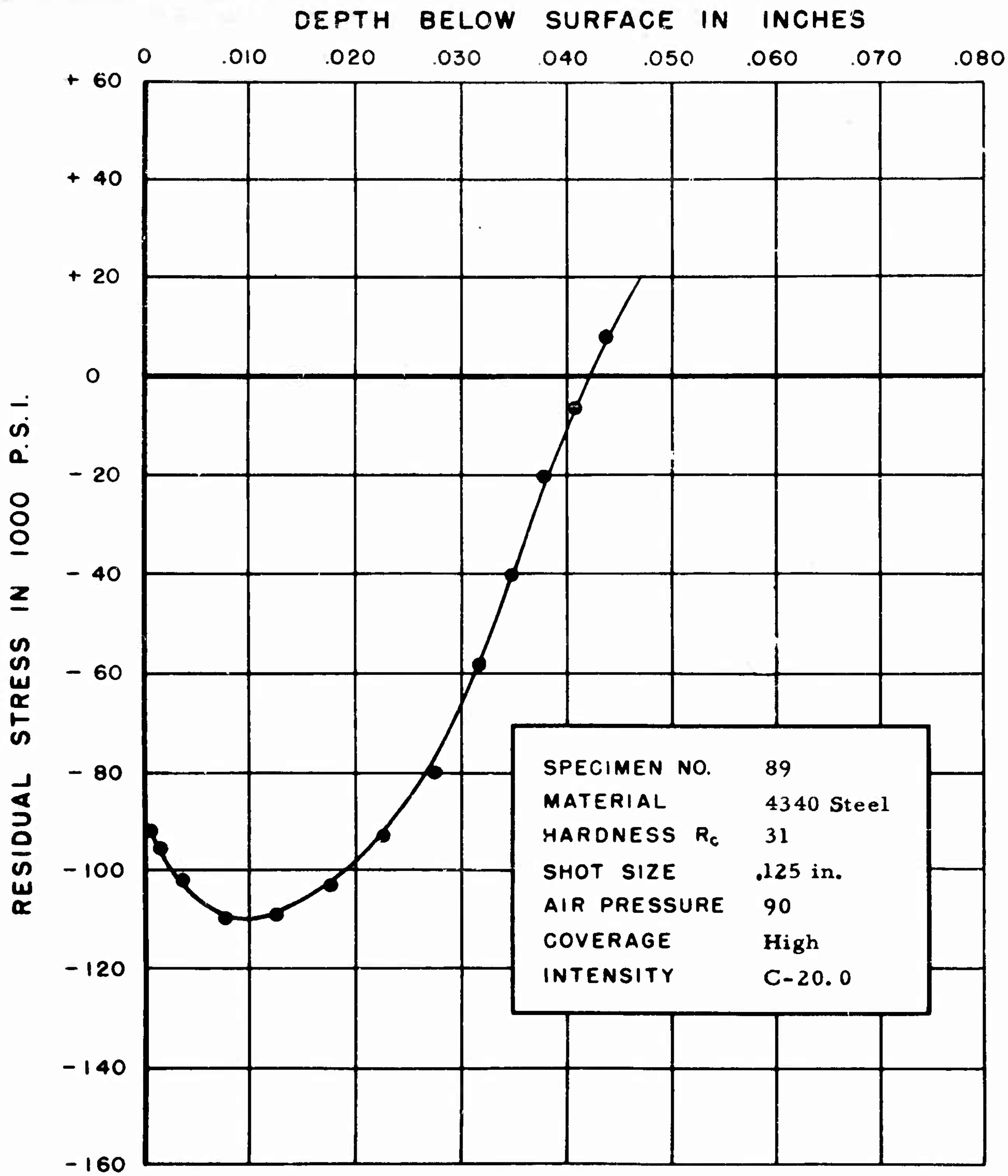

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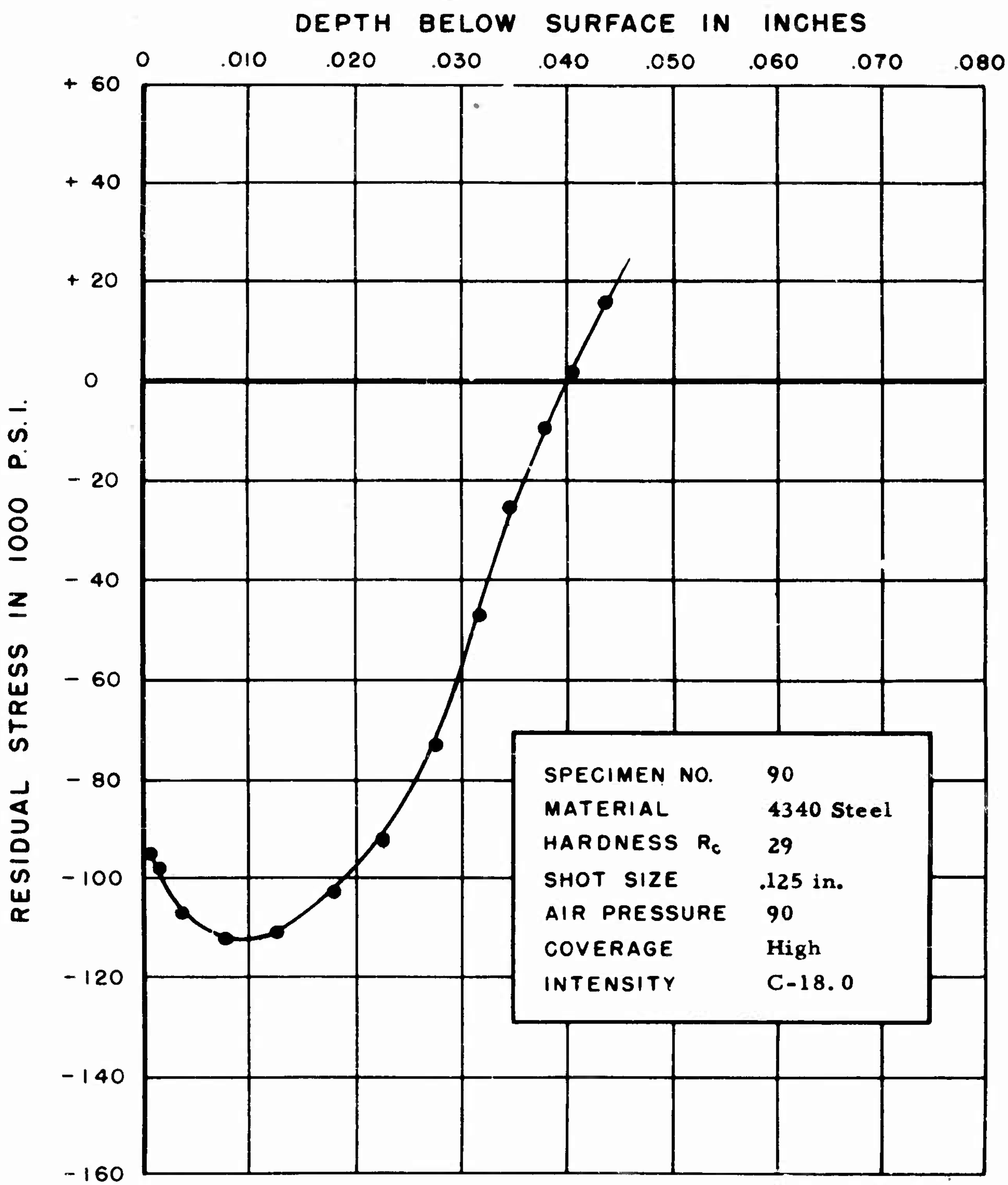

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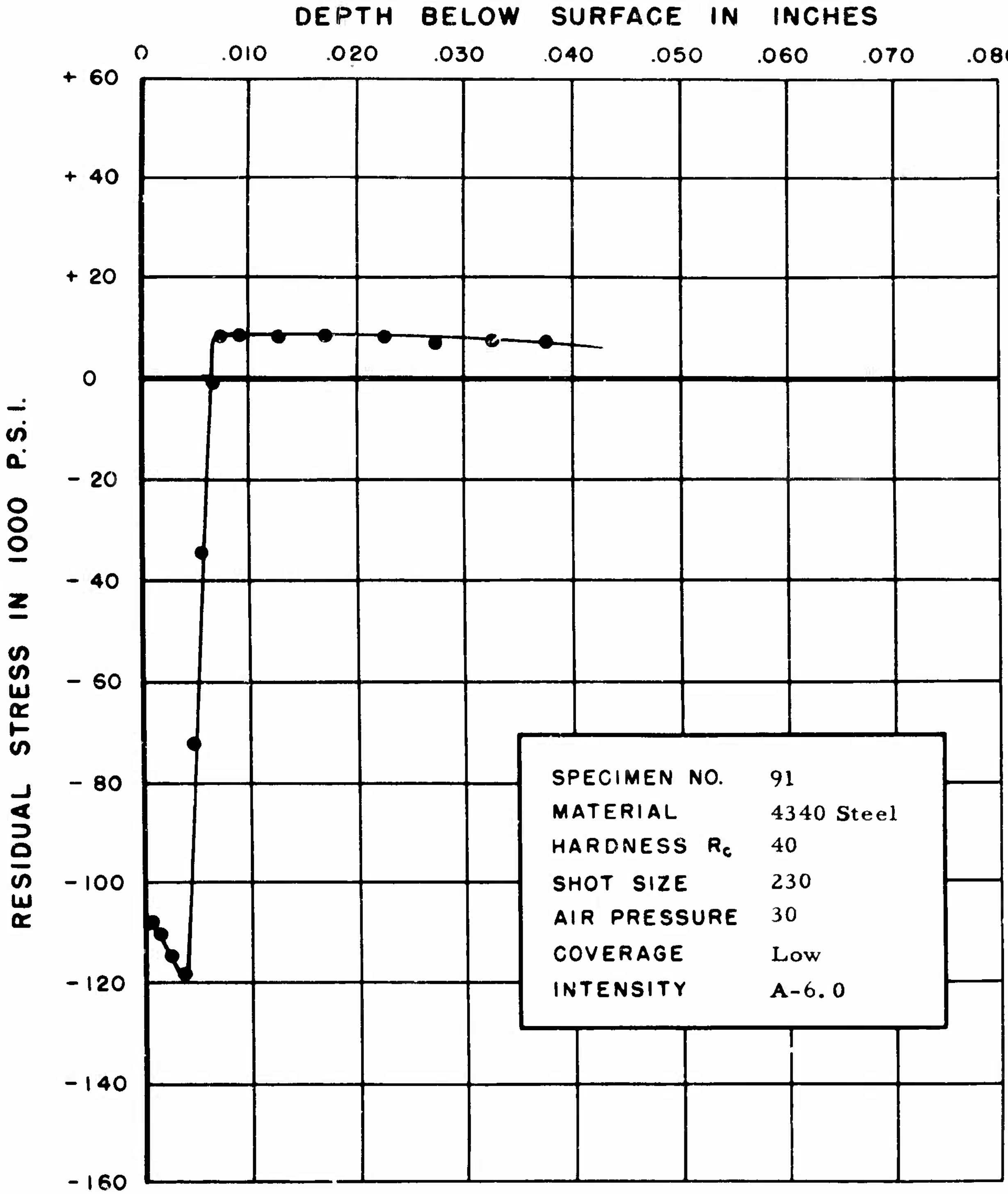

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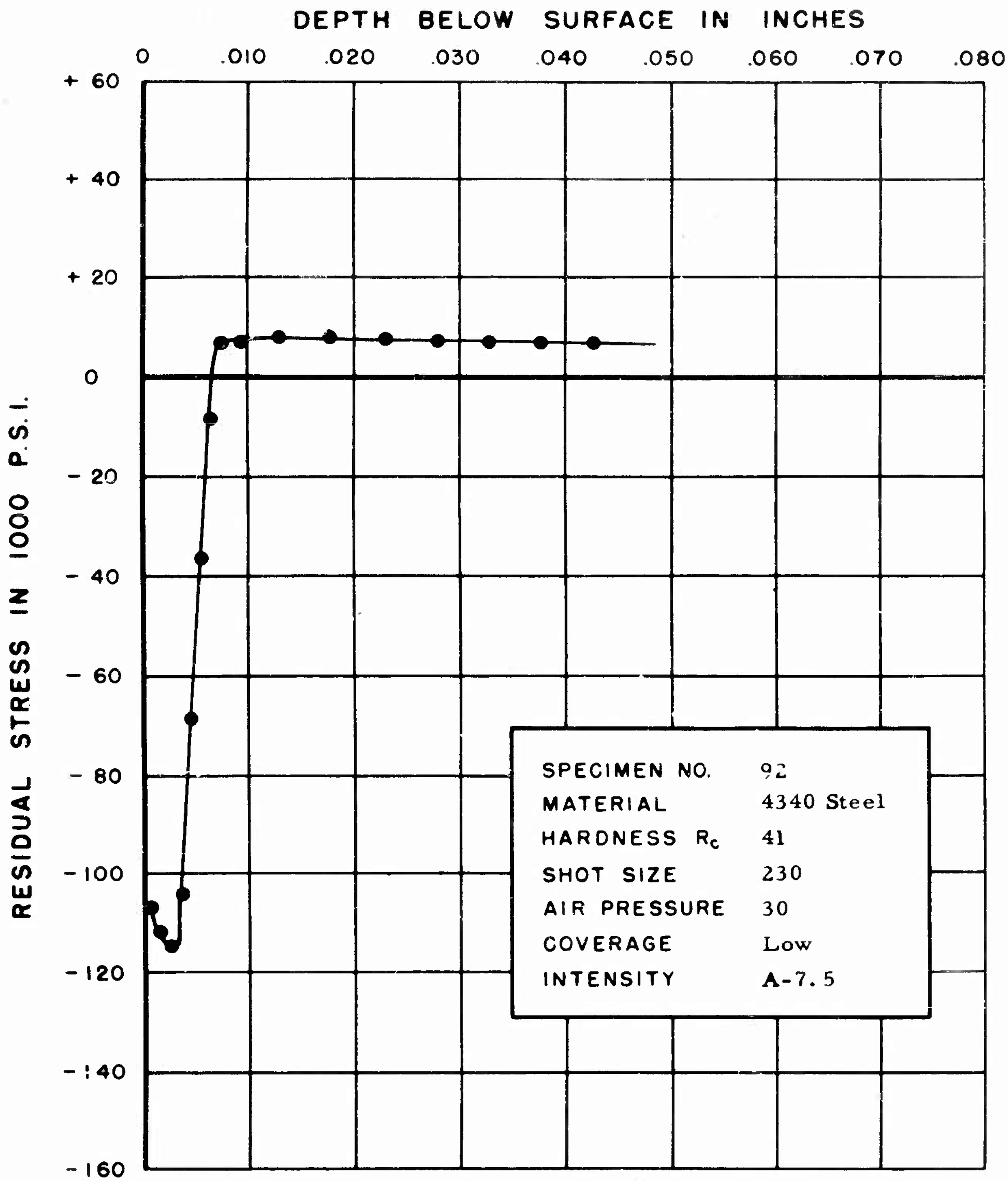

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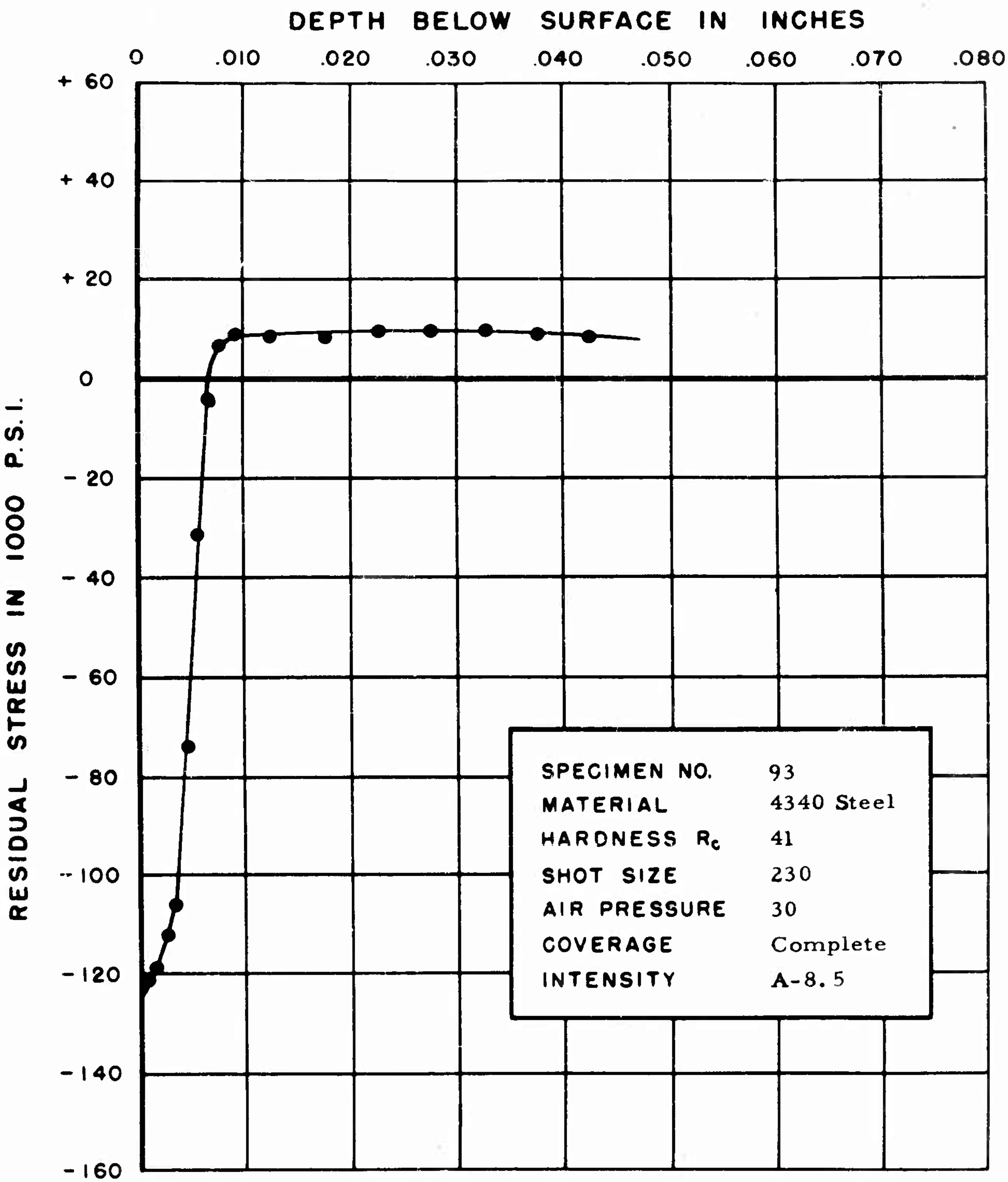

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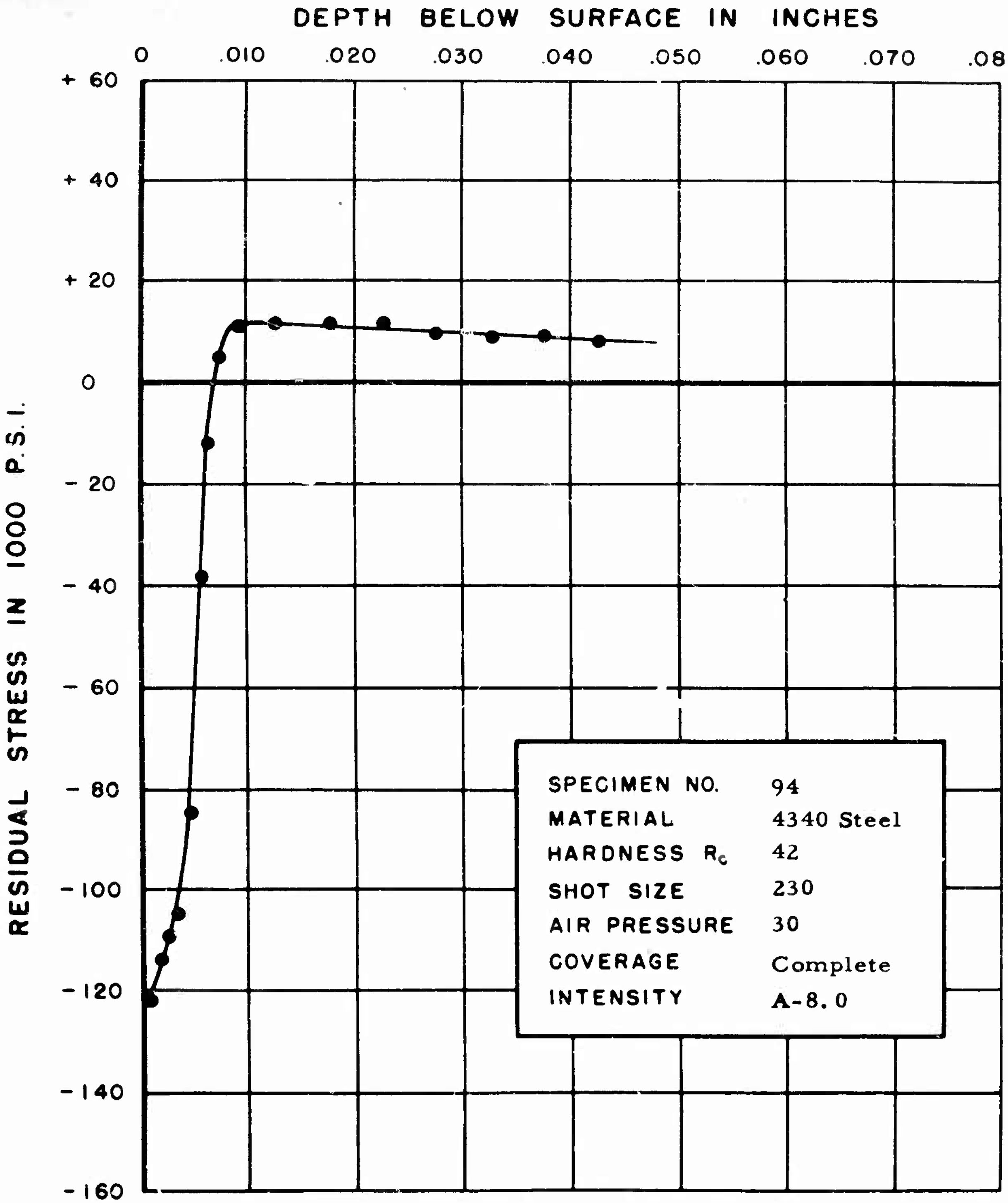

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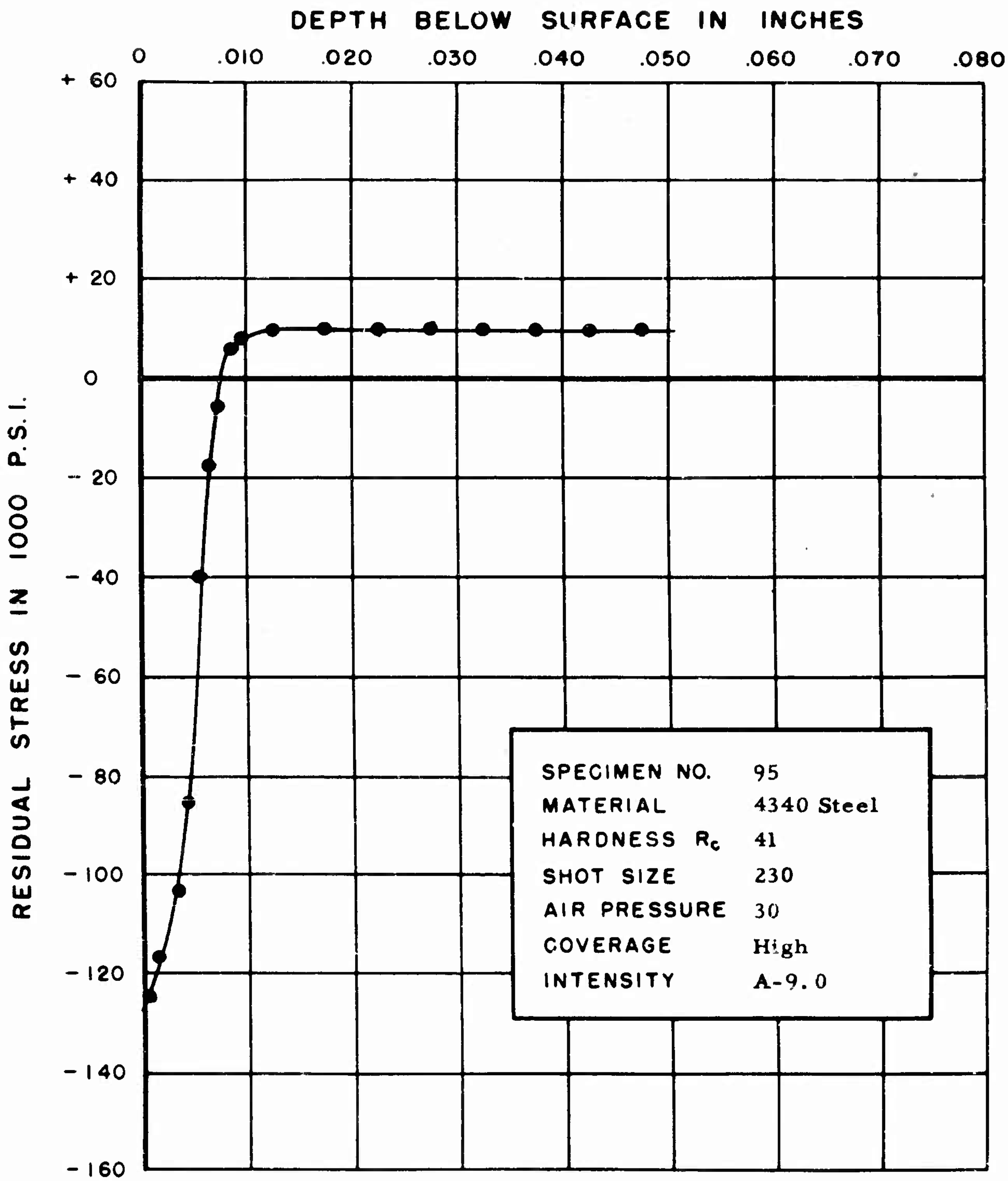

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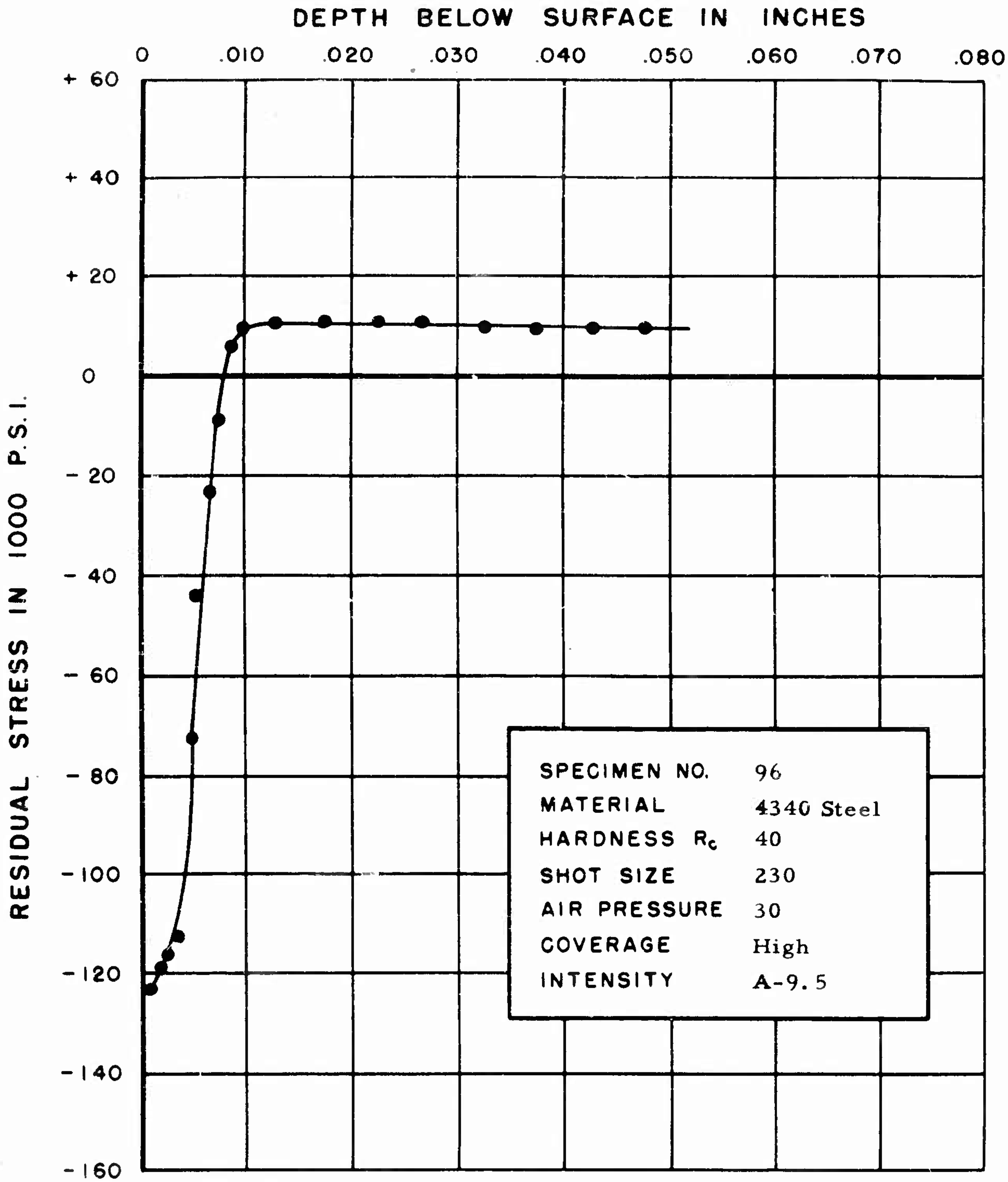

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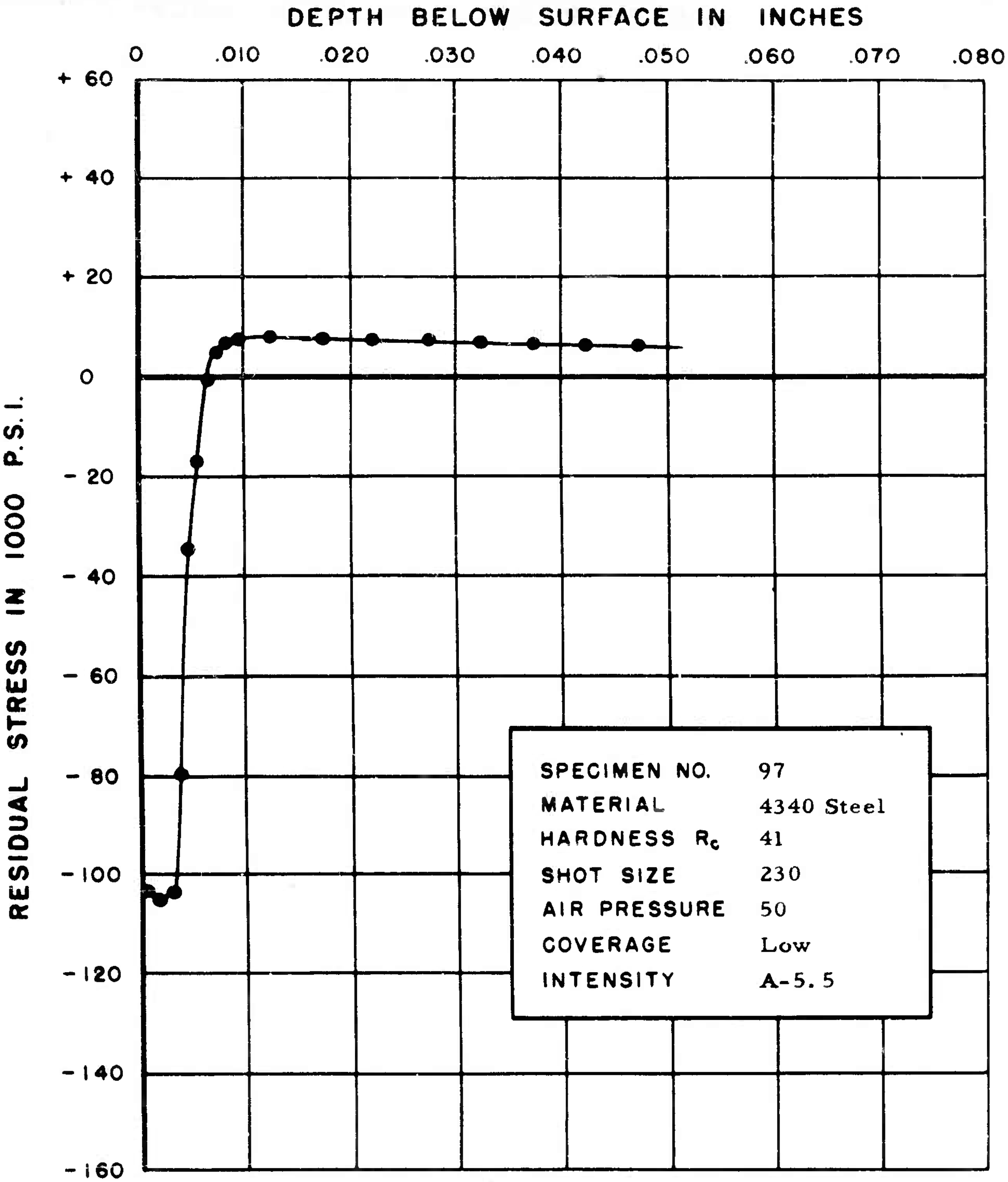
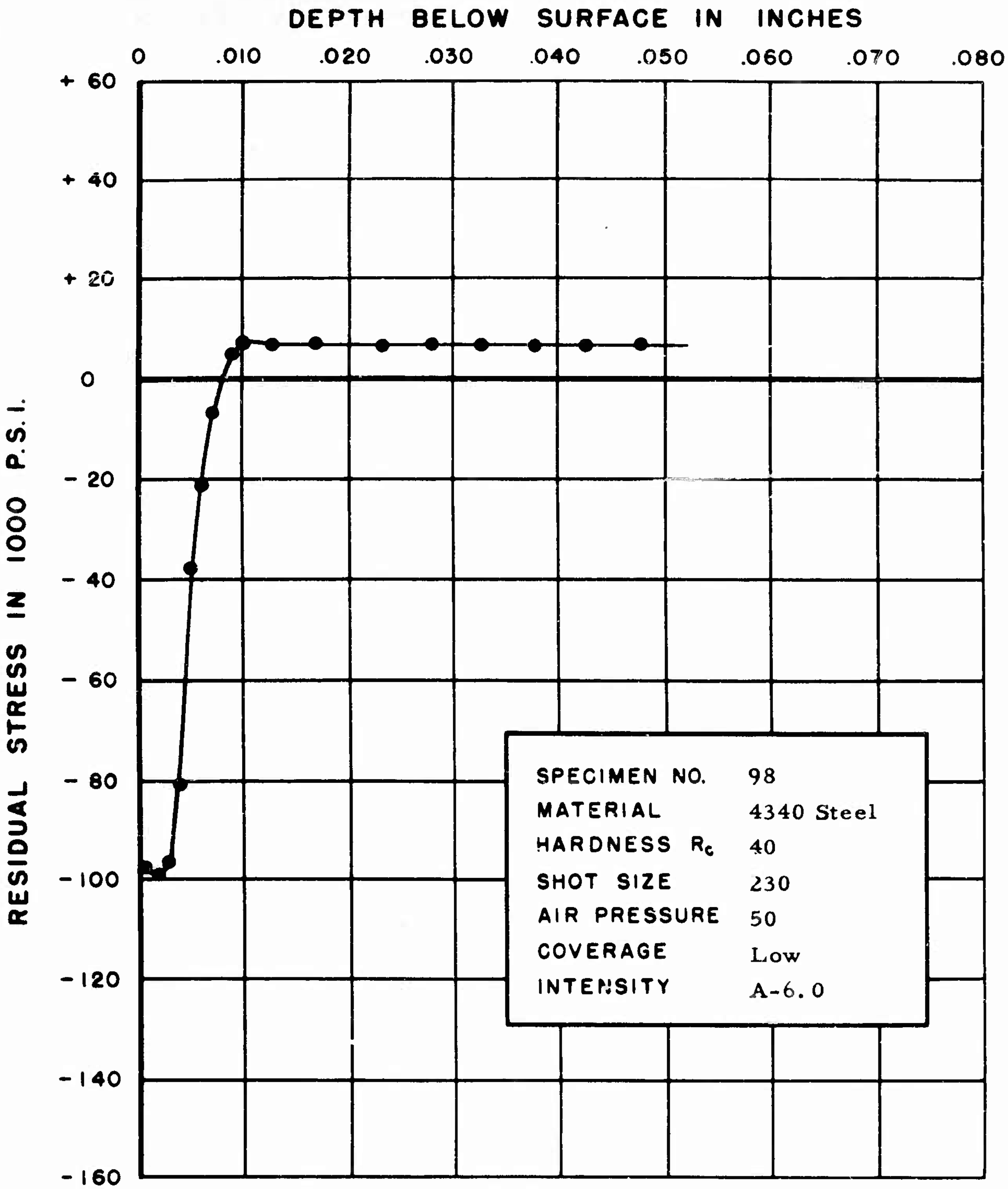


FIGURE 130. RESIDUAL STRESS DISTRIBUTION



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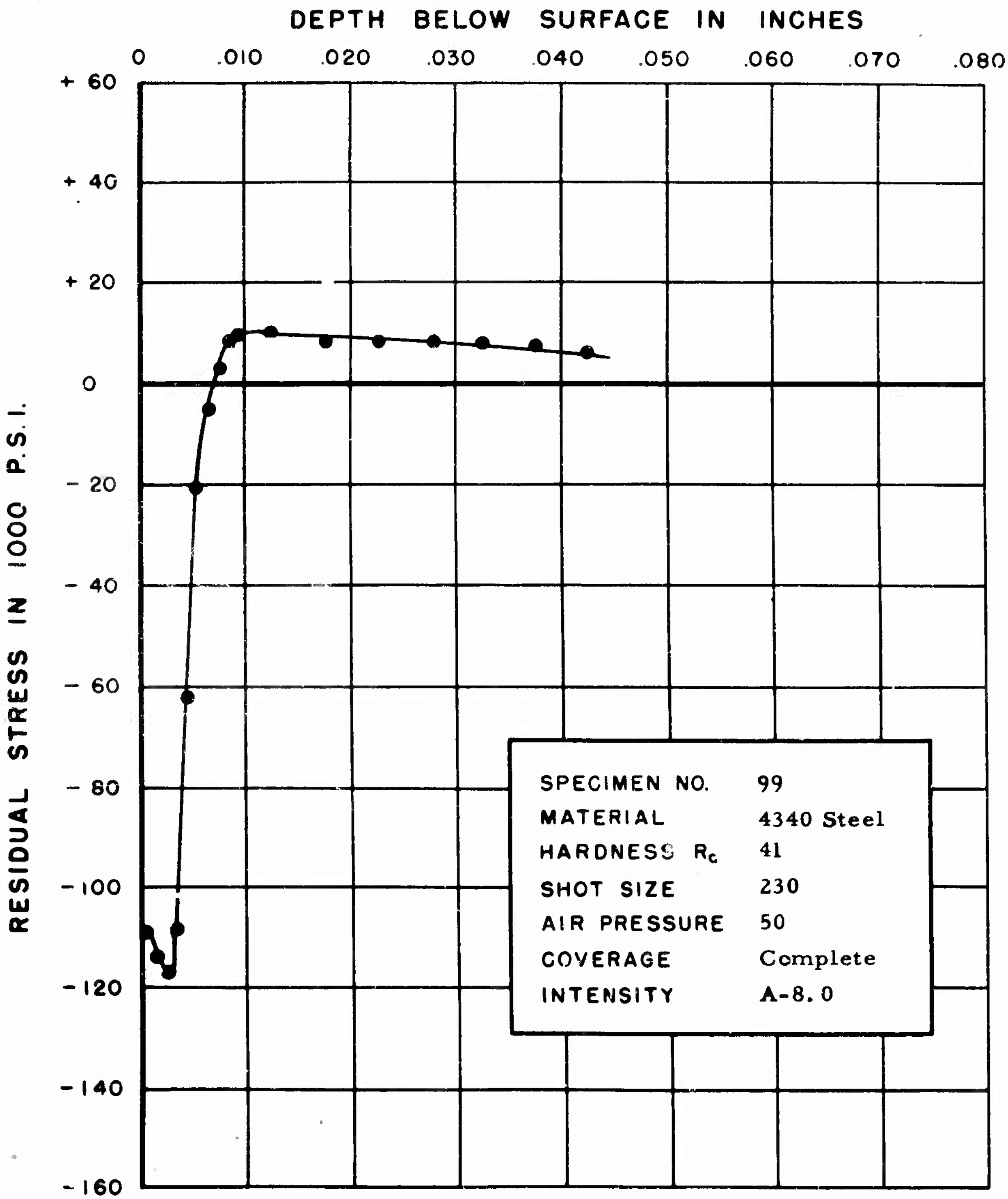

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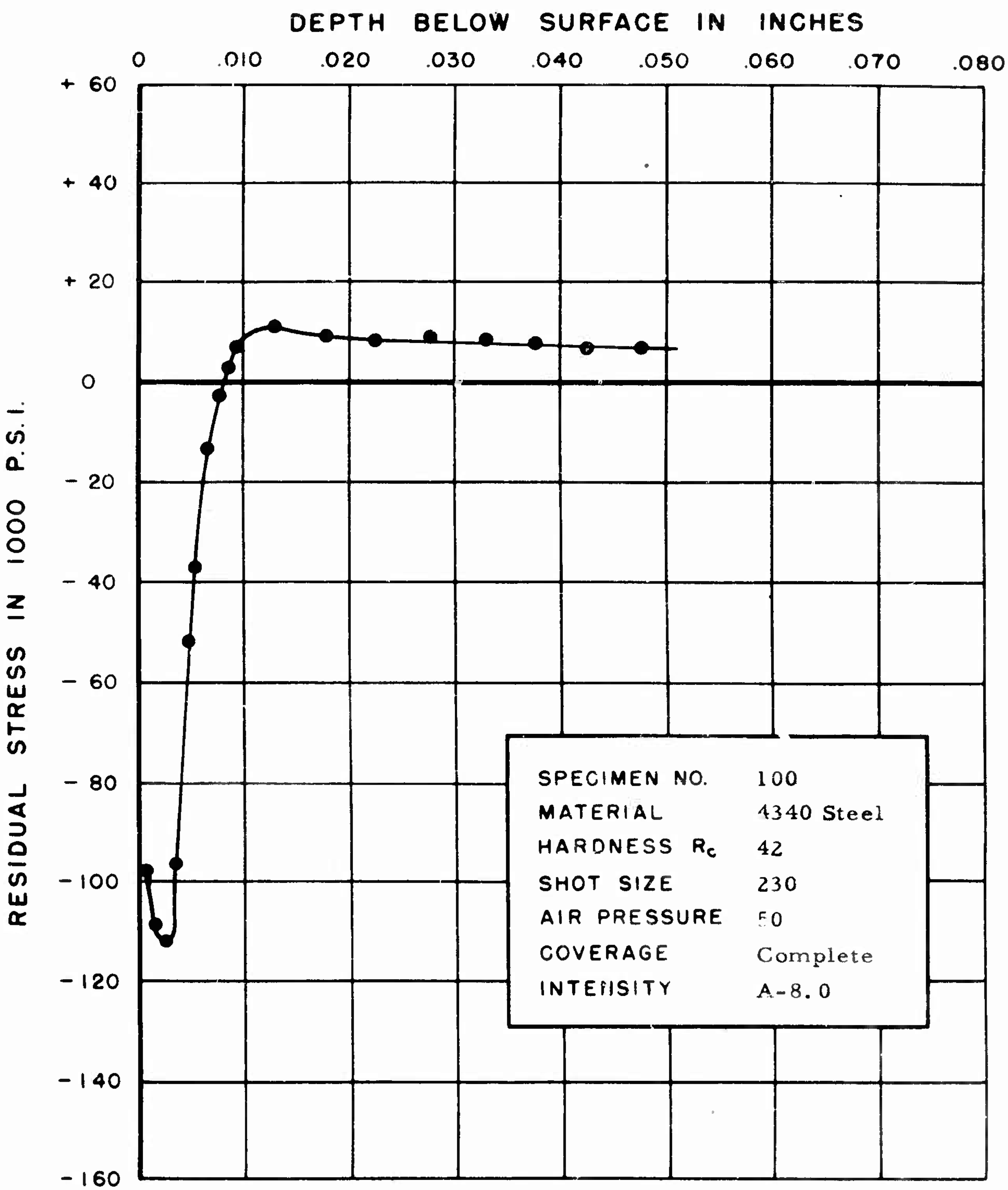


FIGURE 133. RESIDUAL STRESS DISTRIBUTION

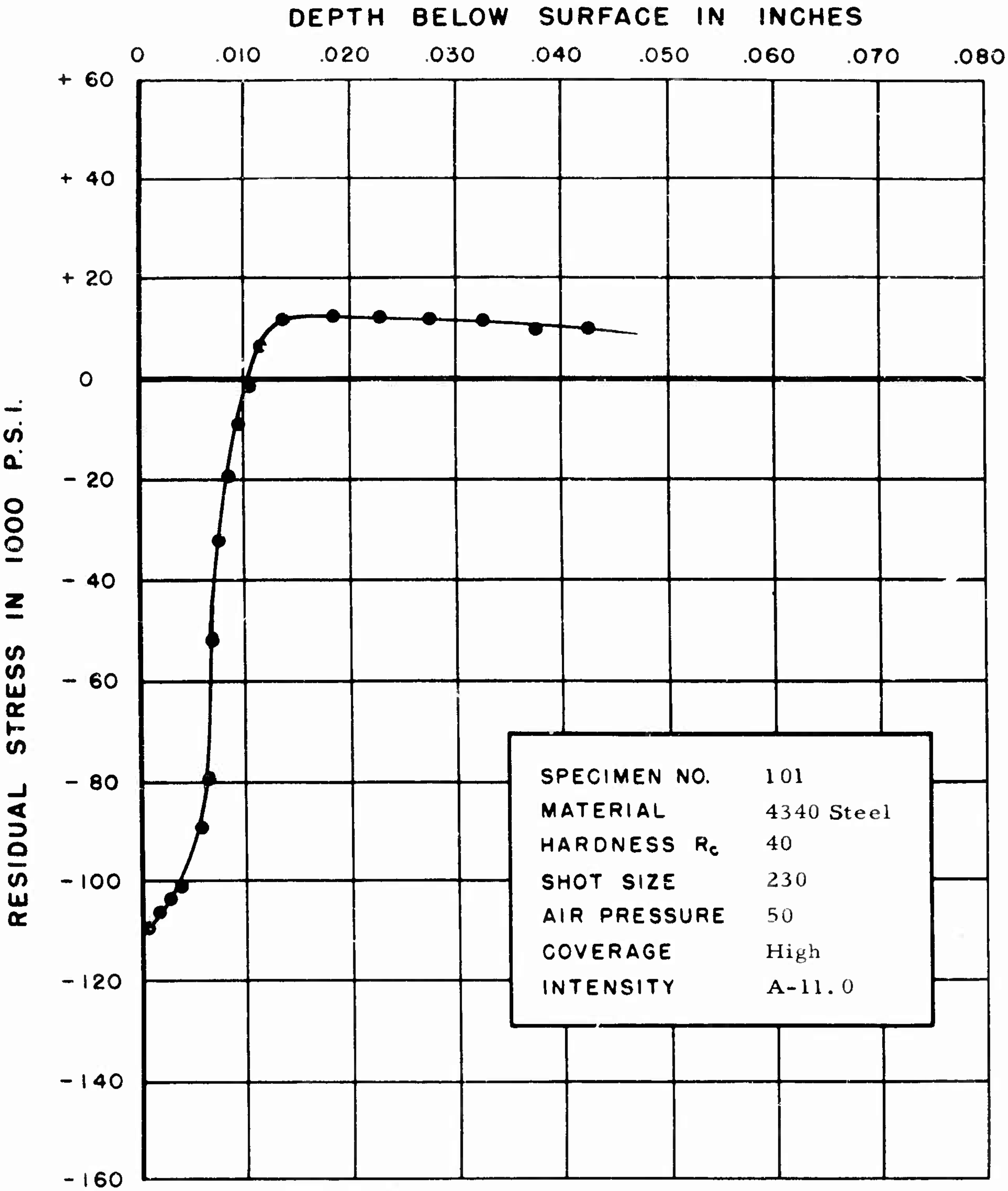


FIGURE 134. RESIDUAL STRESS DISTRIBUTION

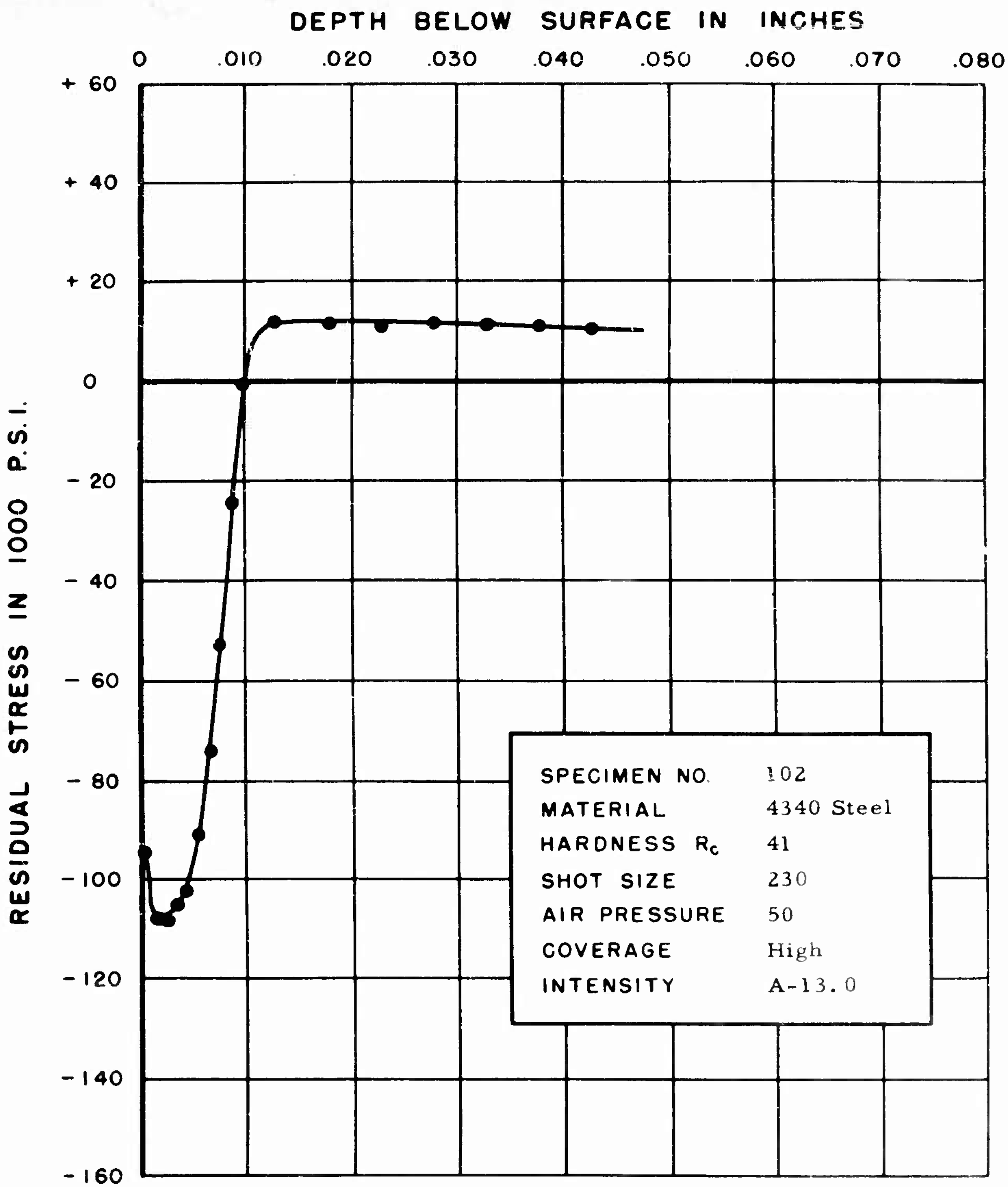


FIGURE 135 RESIDUAL STRESS DISTRIBUTION

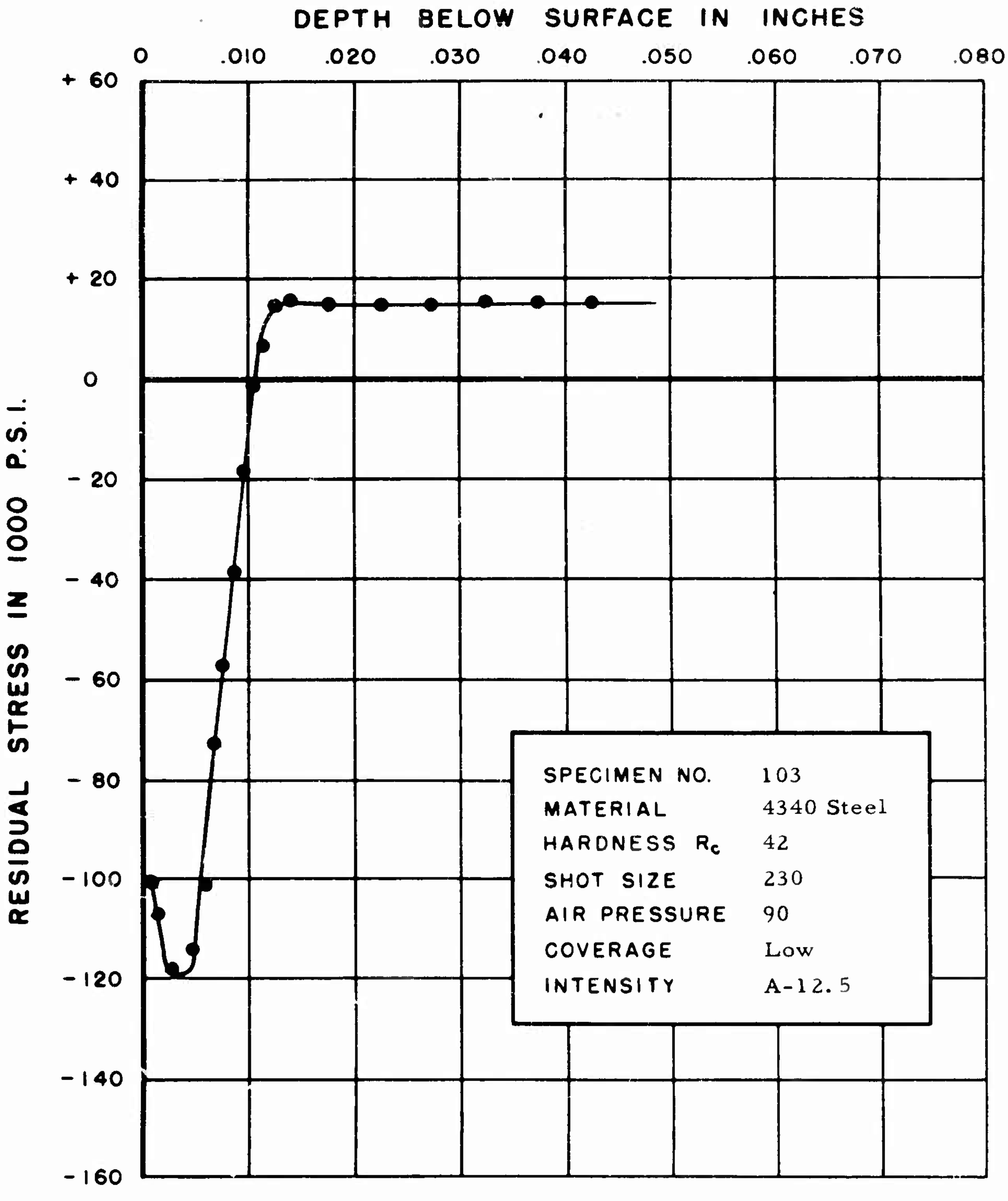


FIGURE 136. RESIDUAL STRESS DISTRIBUTION

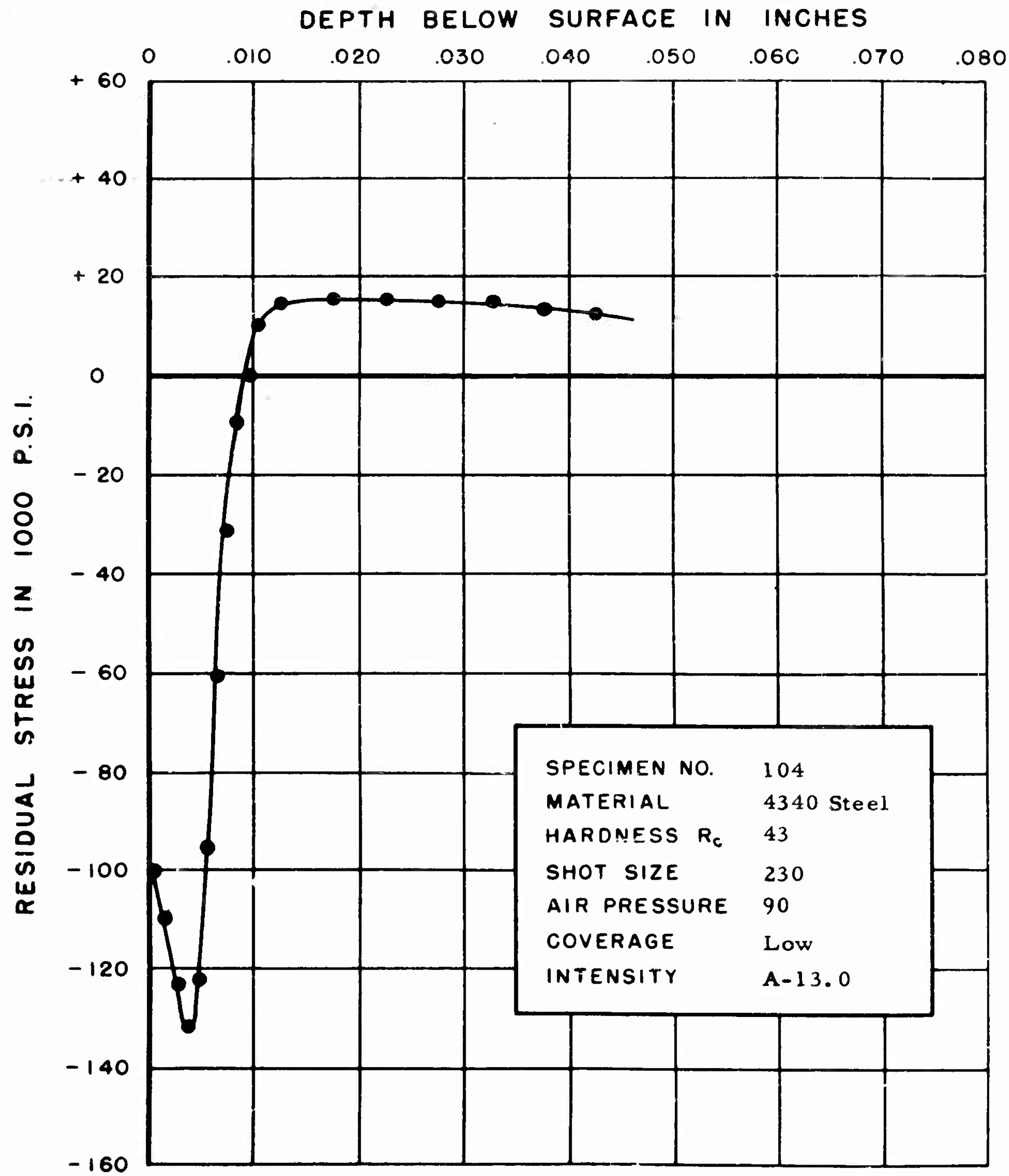
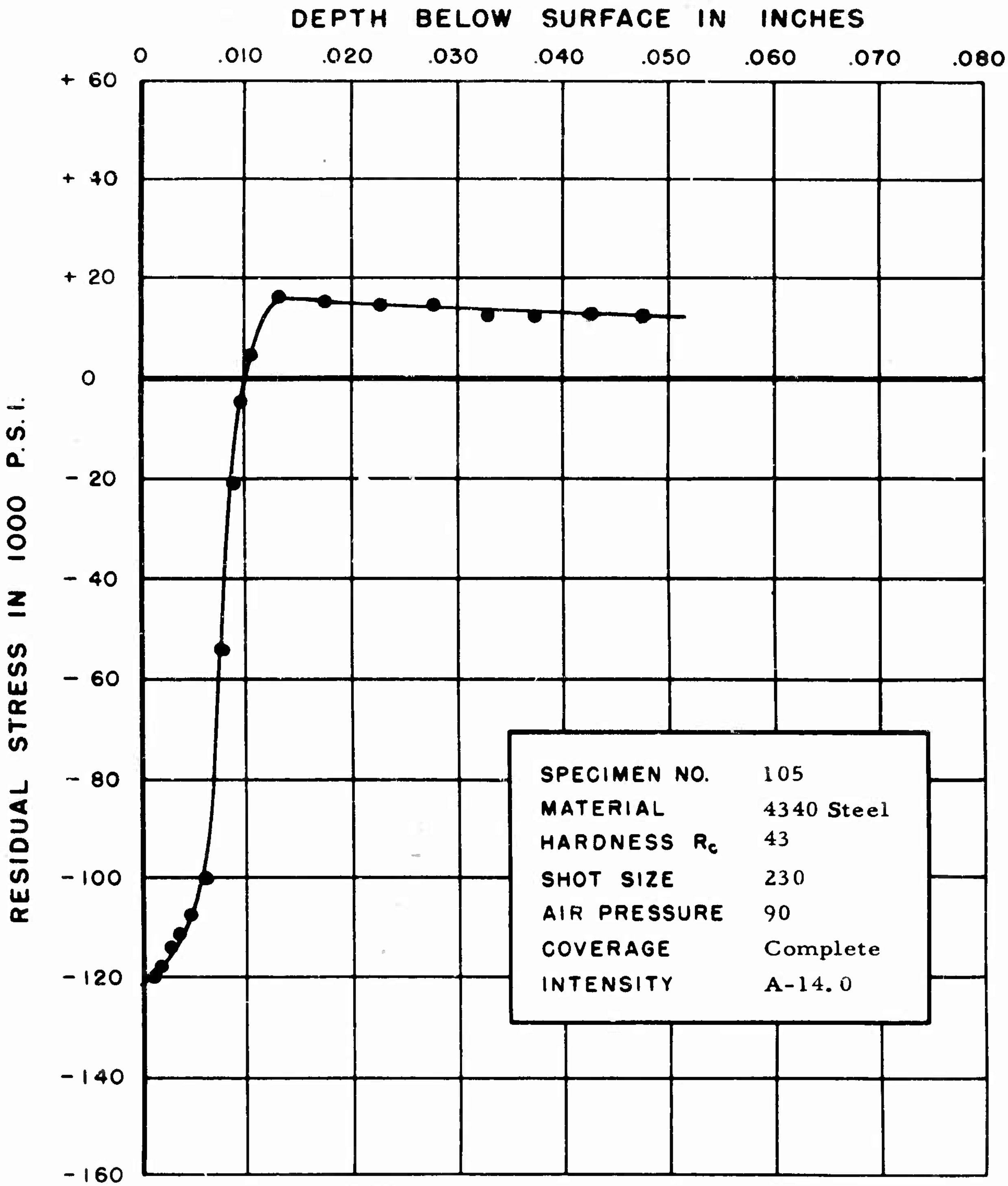


FIGURE 137. RESIDUAL STRESS DISTRIBUTION



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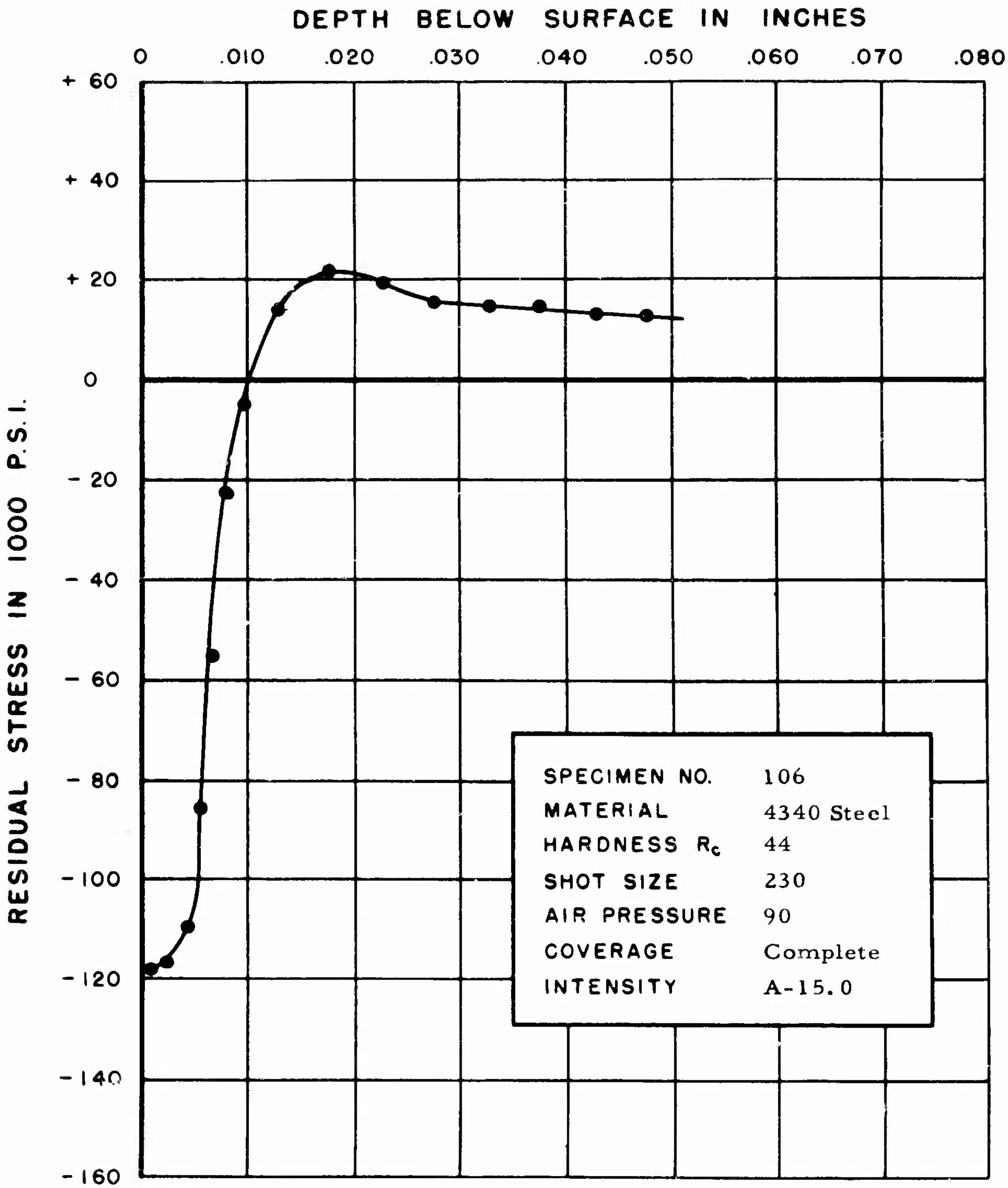

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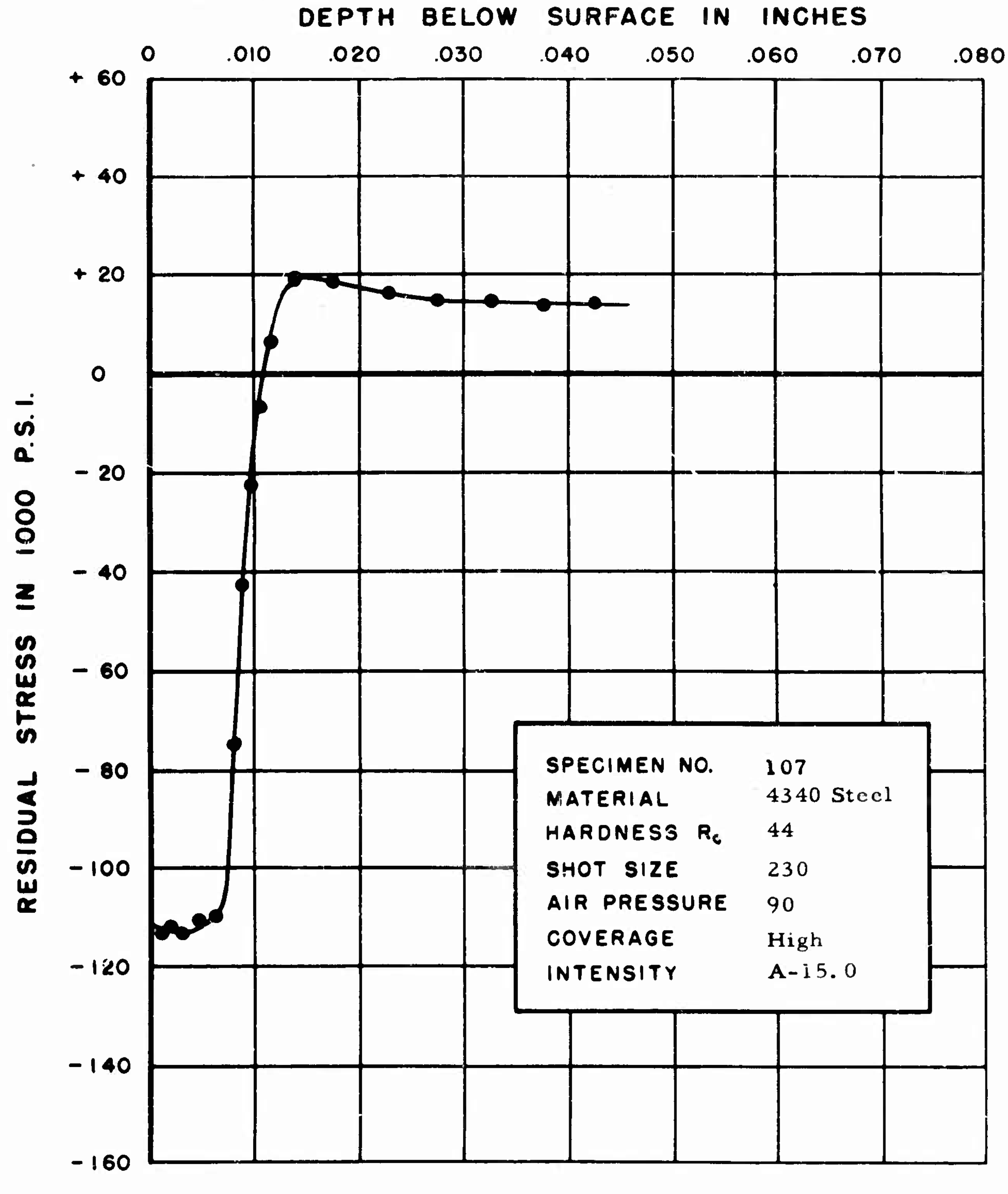

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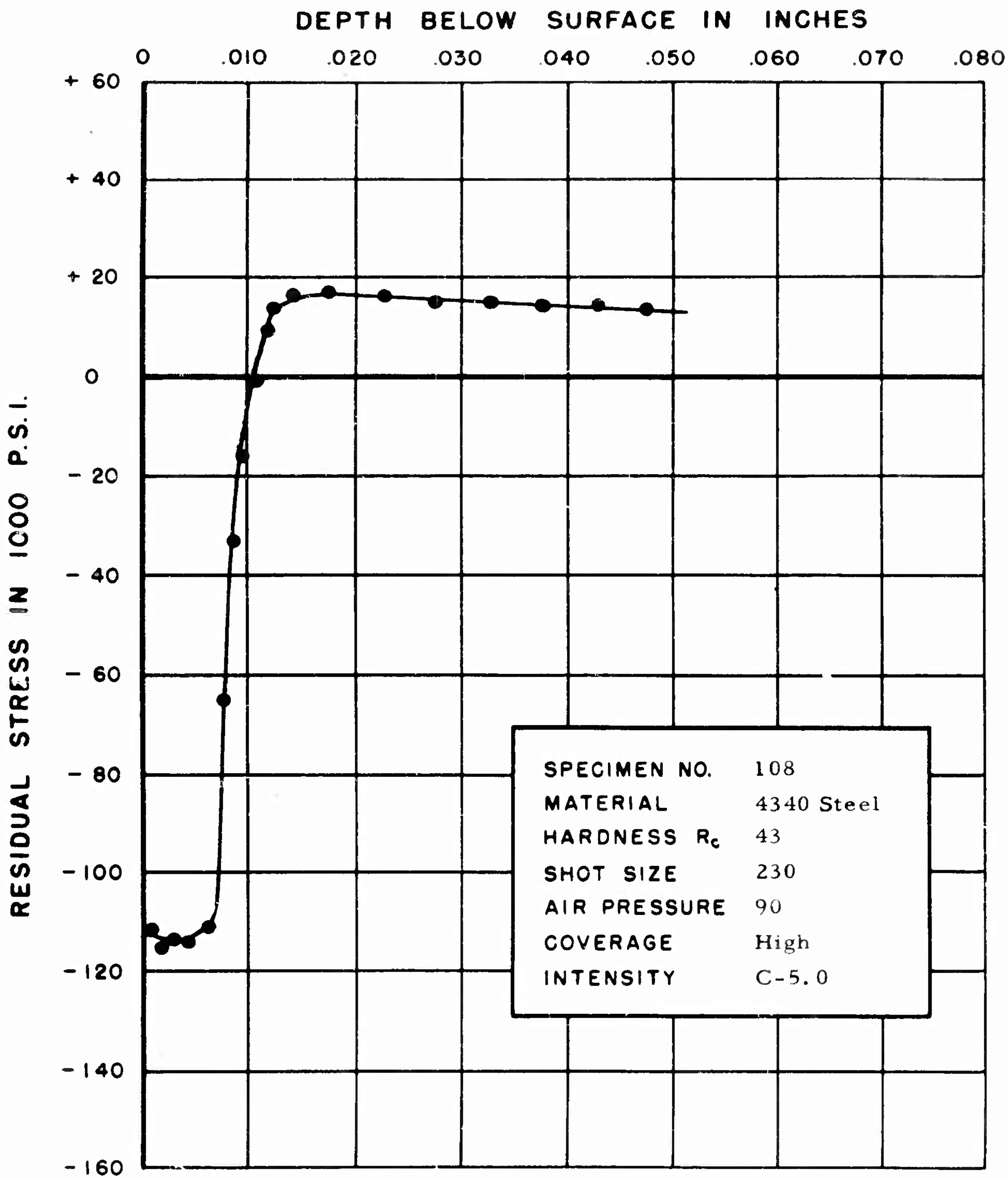
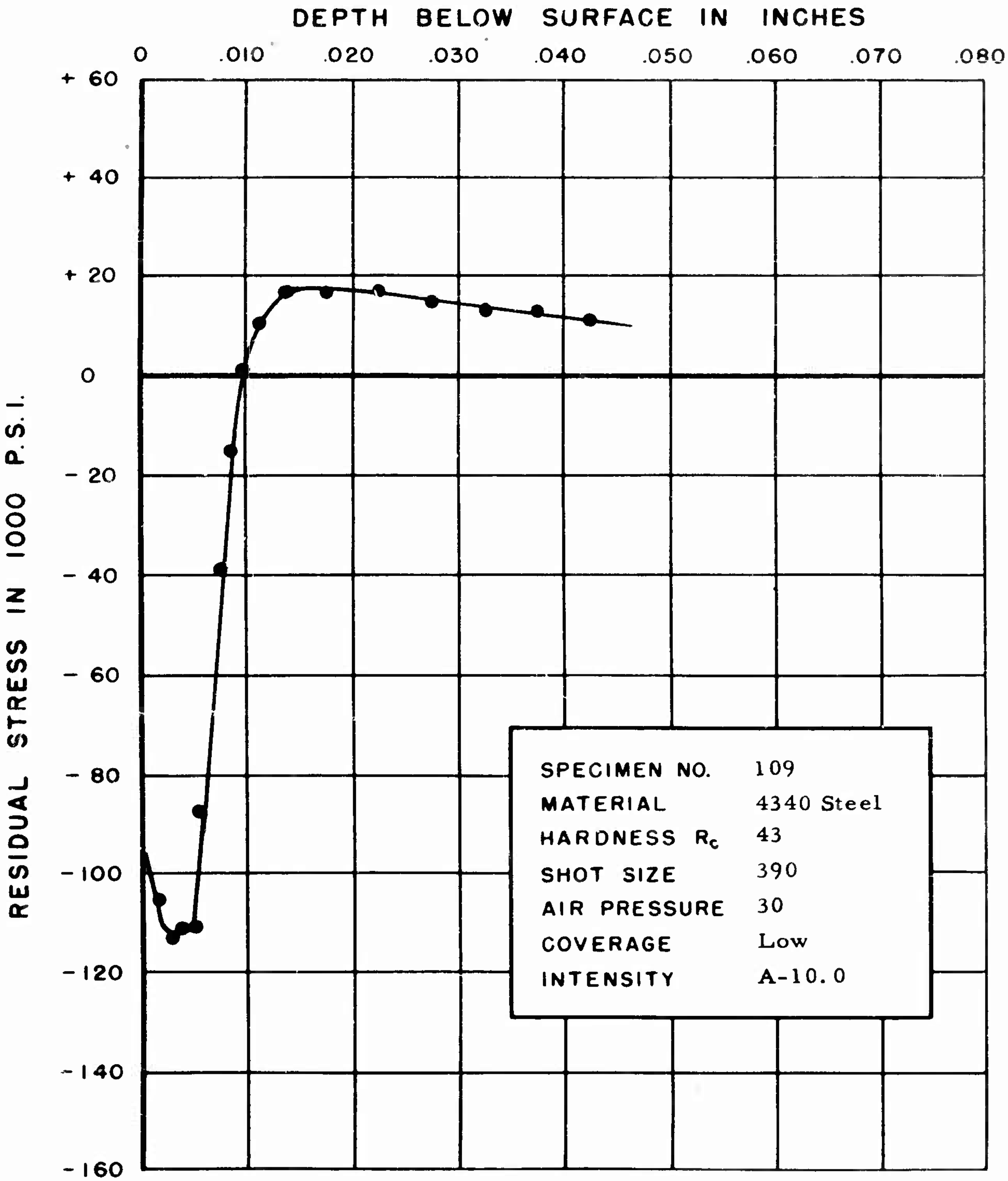


FIGURE 141. RESIDUAL STRESS DISTRIBUTION



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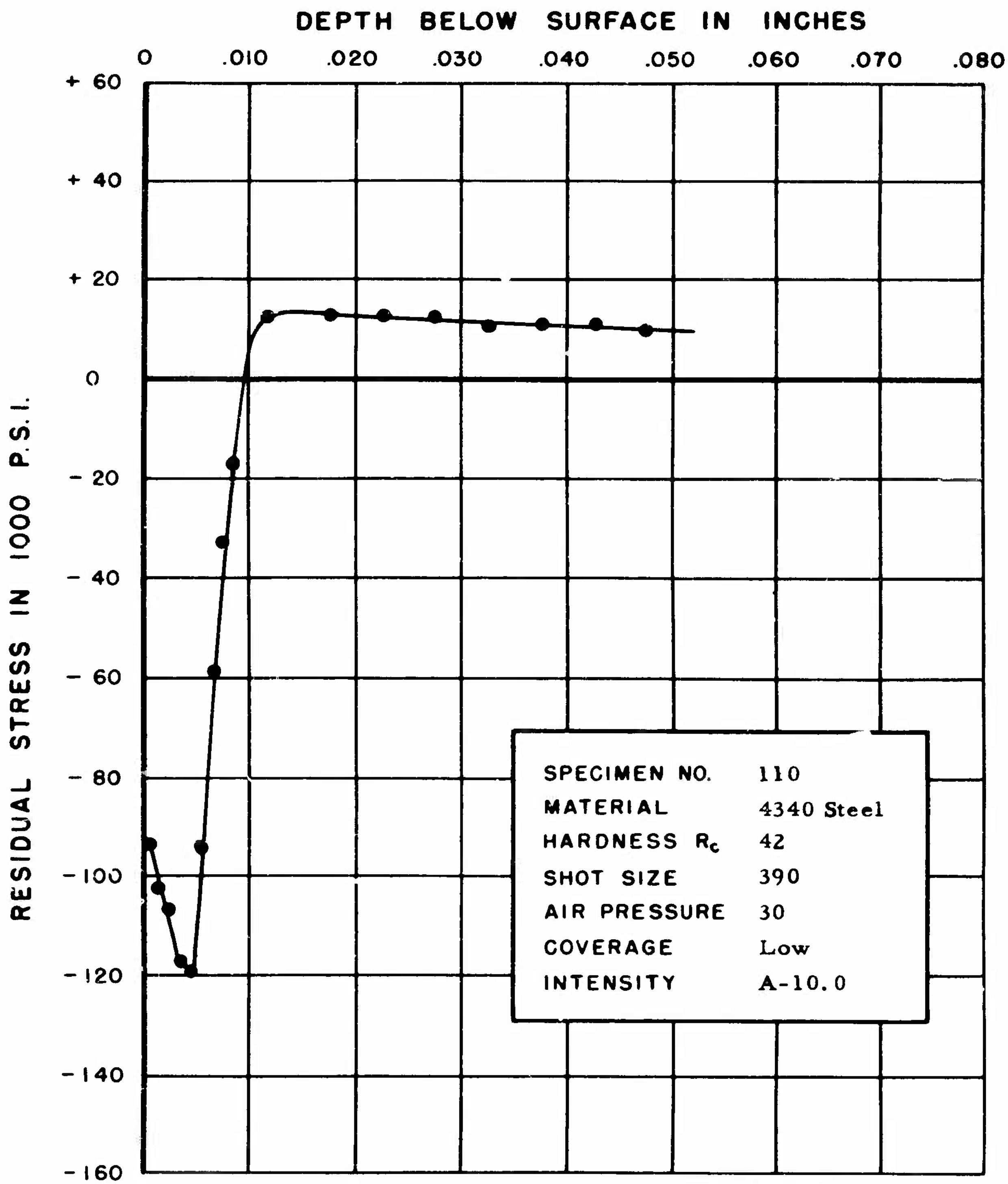

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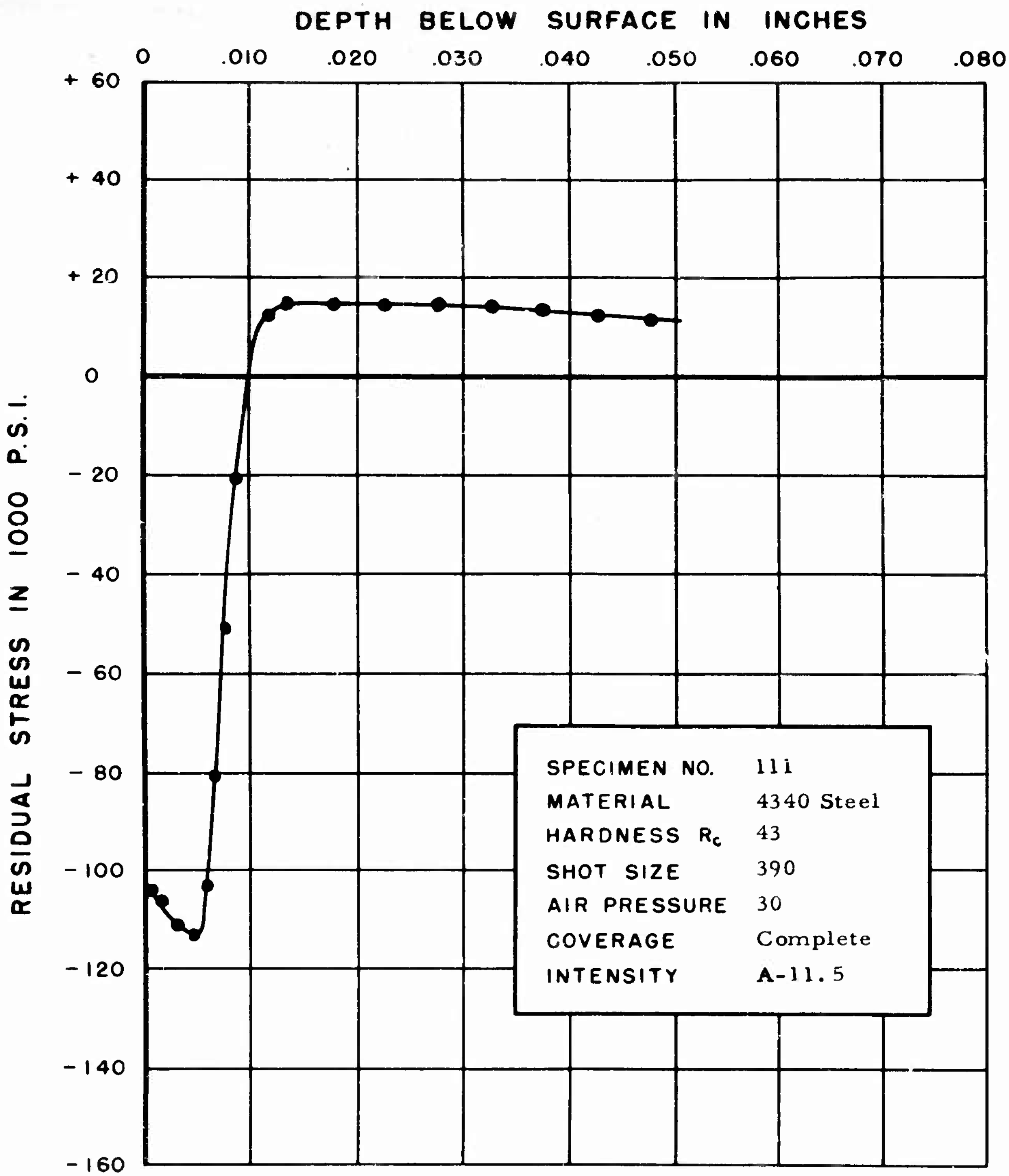

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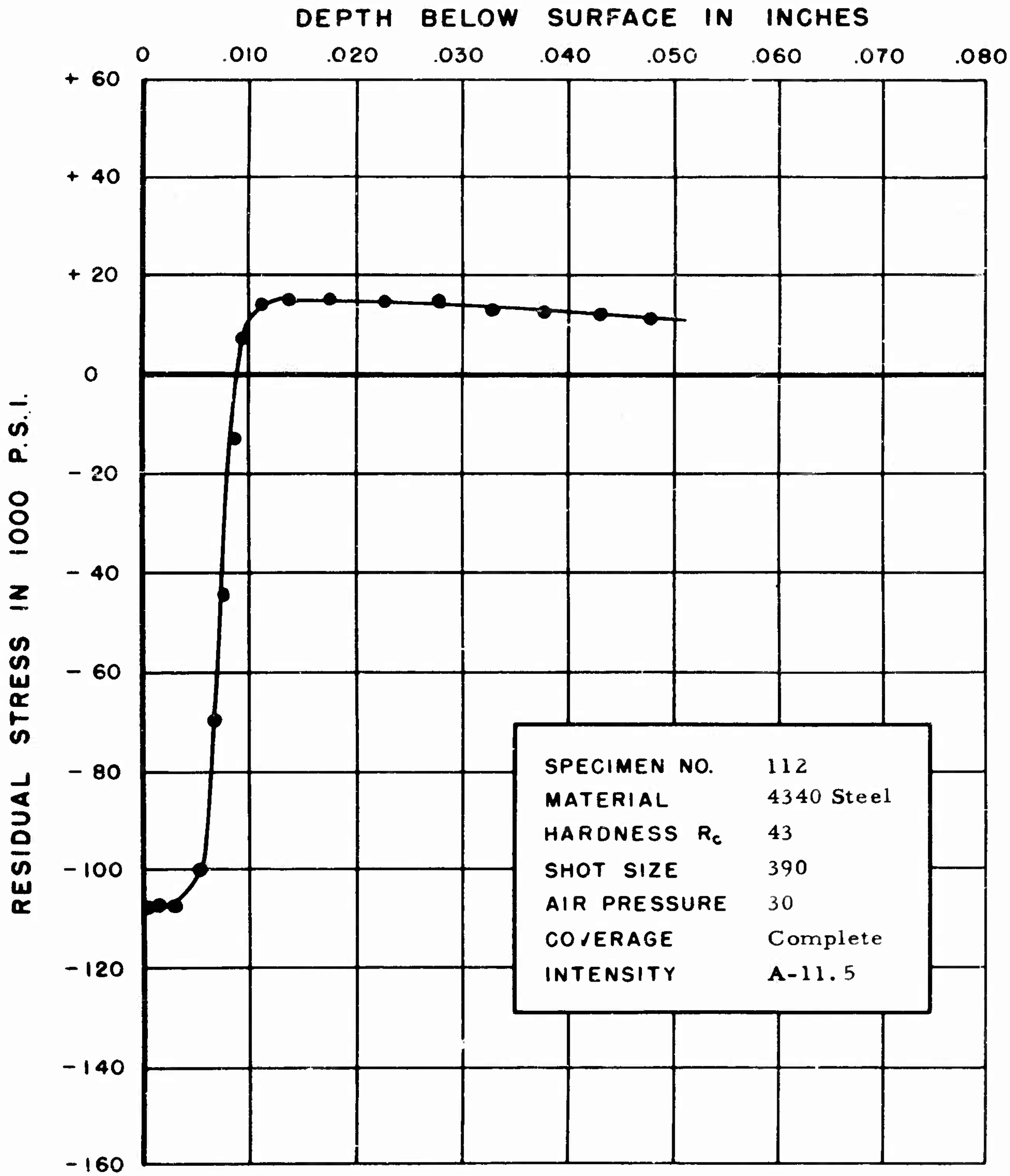

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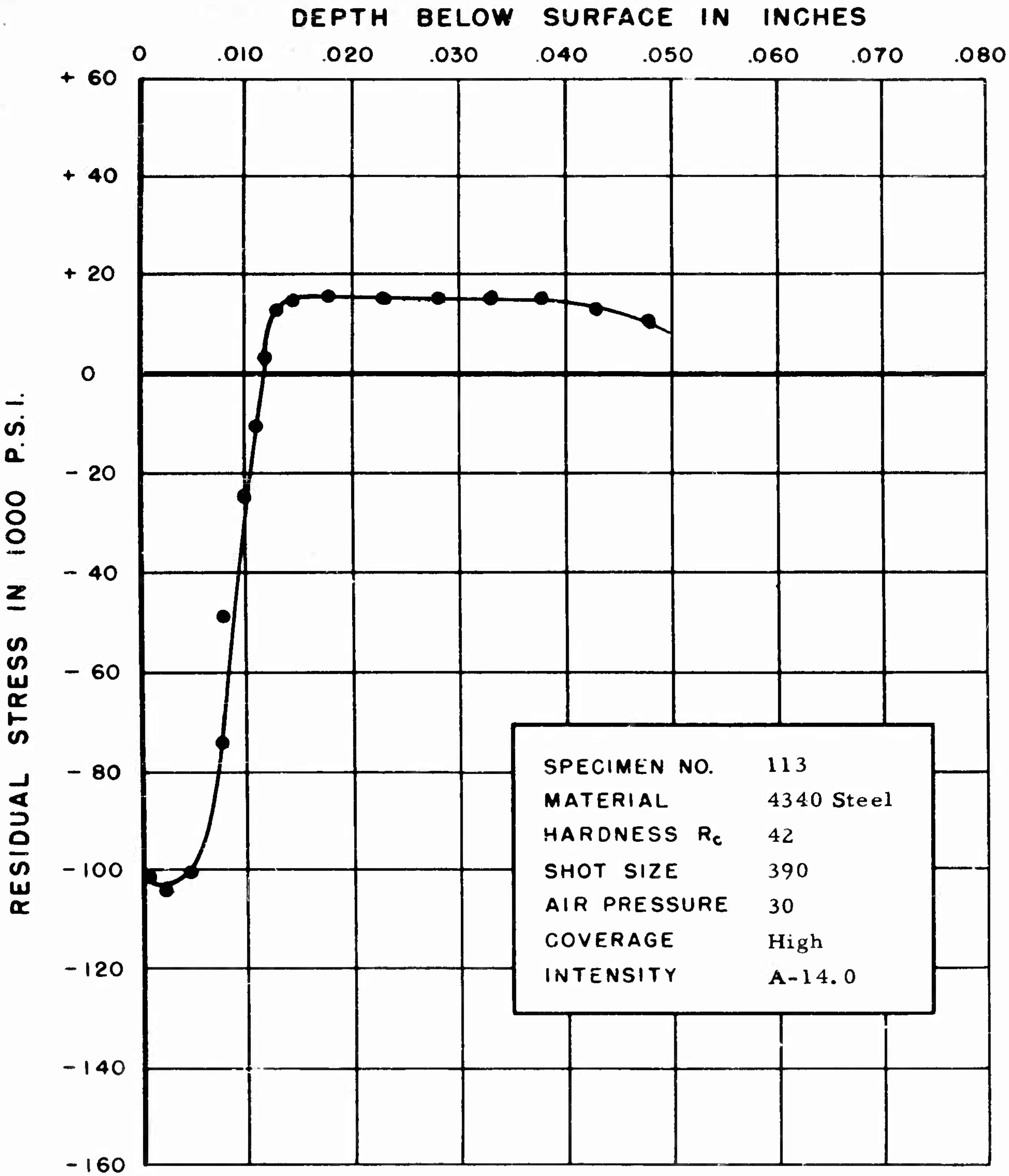


FIGURE 146. RESIDUAL STRESS DISTRIBUTION

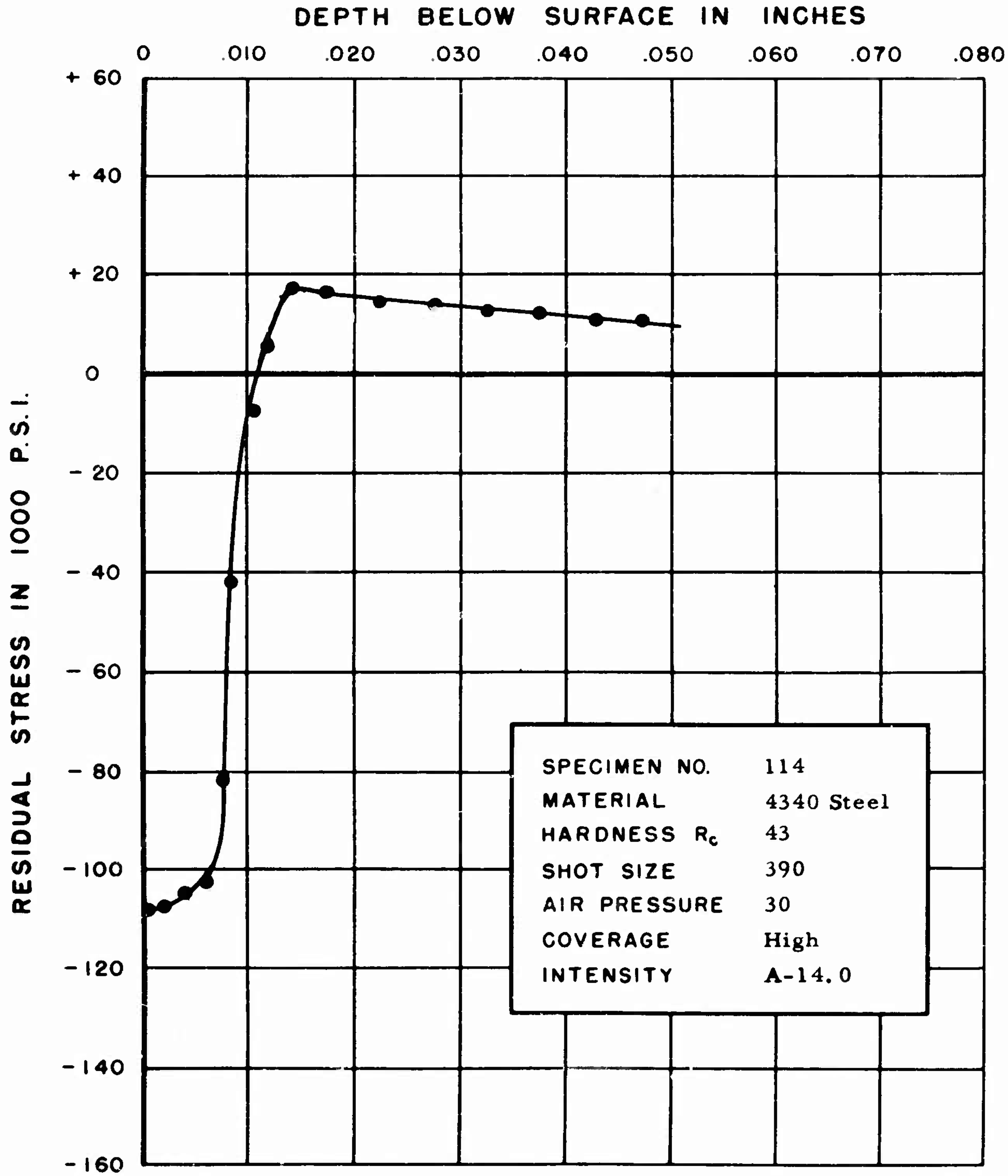


FIGURE 147. RESIDUAL STRESS DISTRIBUTION

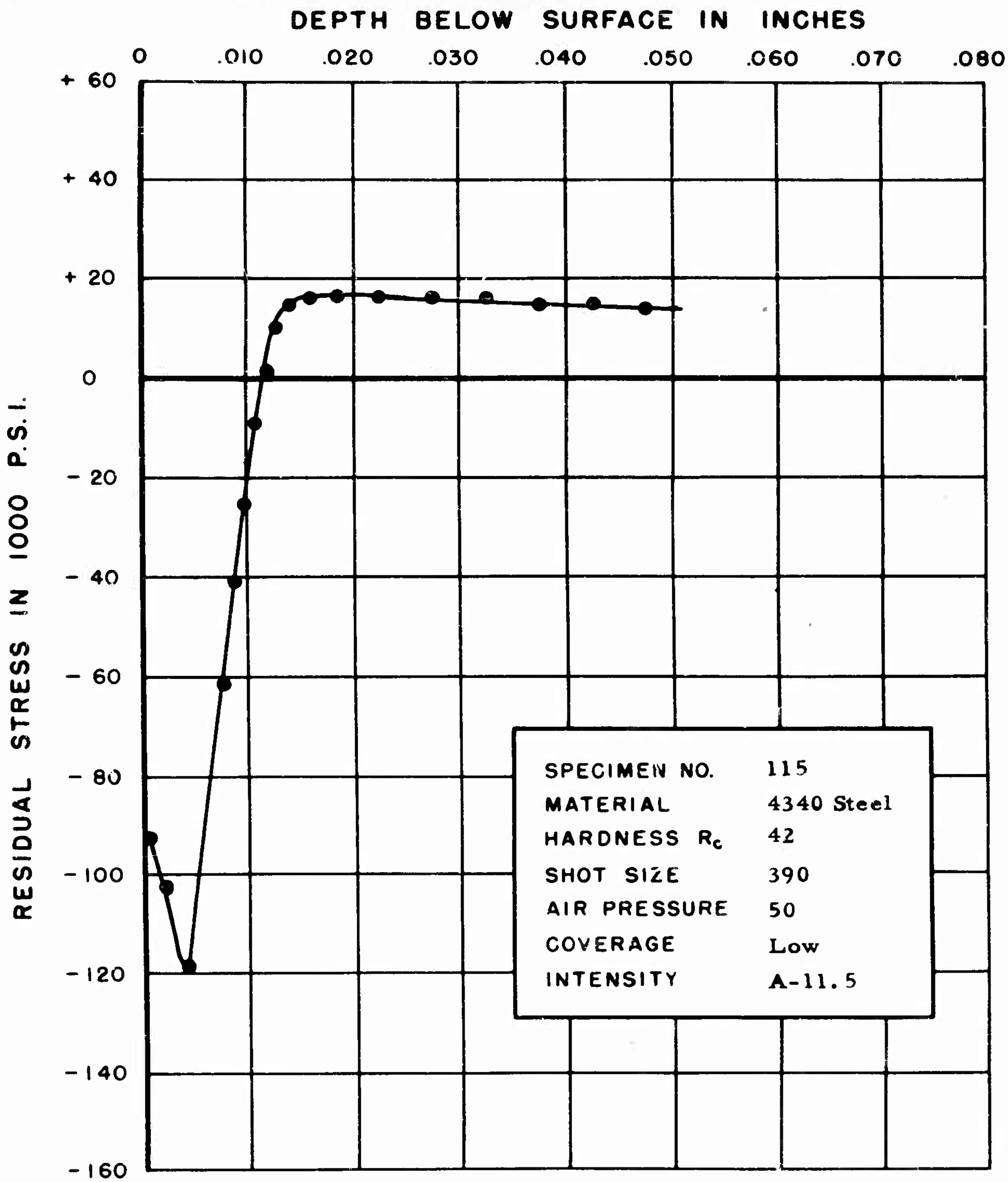


FIGURE 148. RESIDUAL STRESS DISTRIBUTION

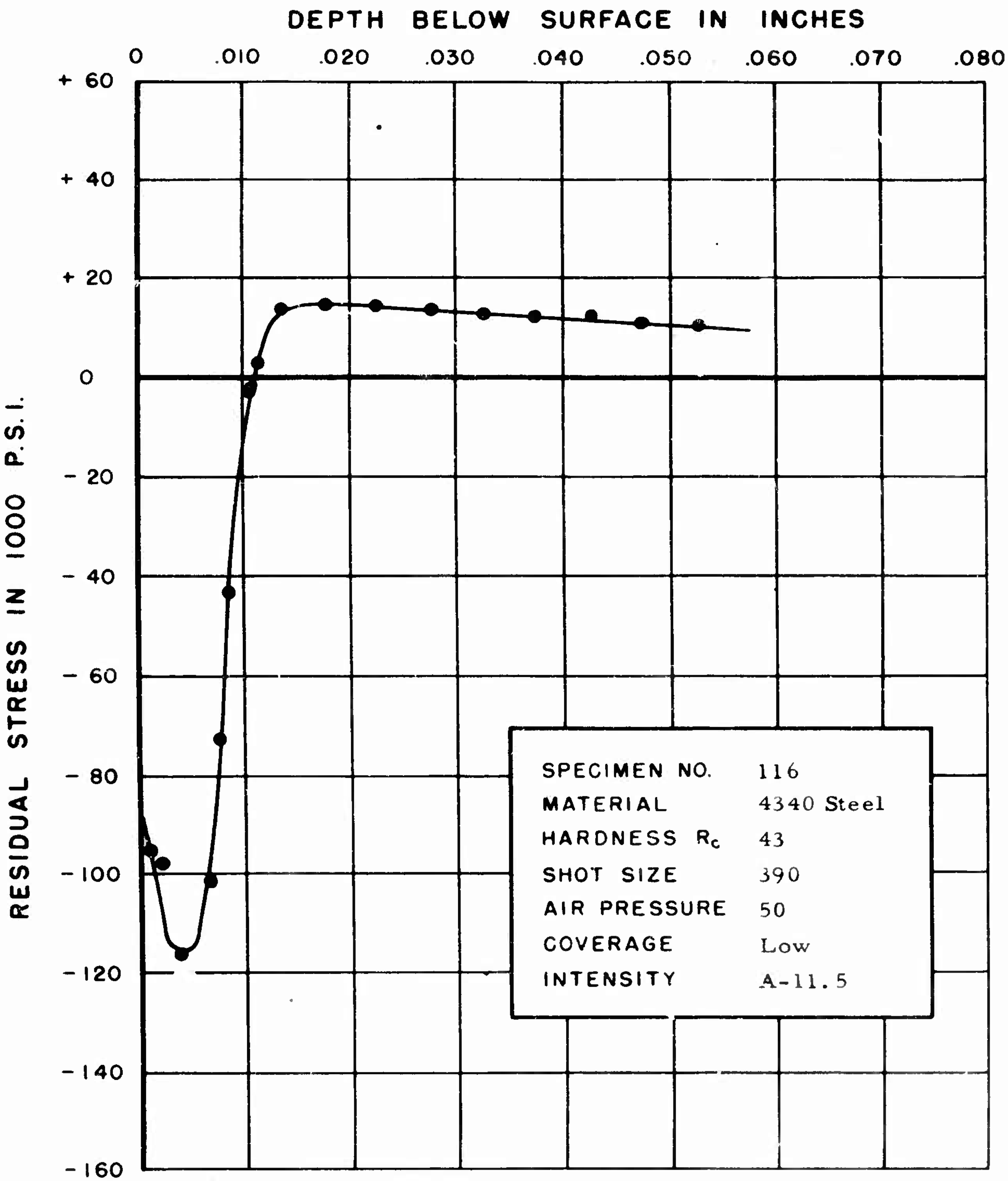


FIGURE 149. RESIDUAL STRESS DISTRIBUTION

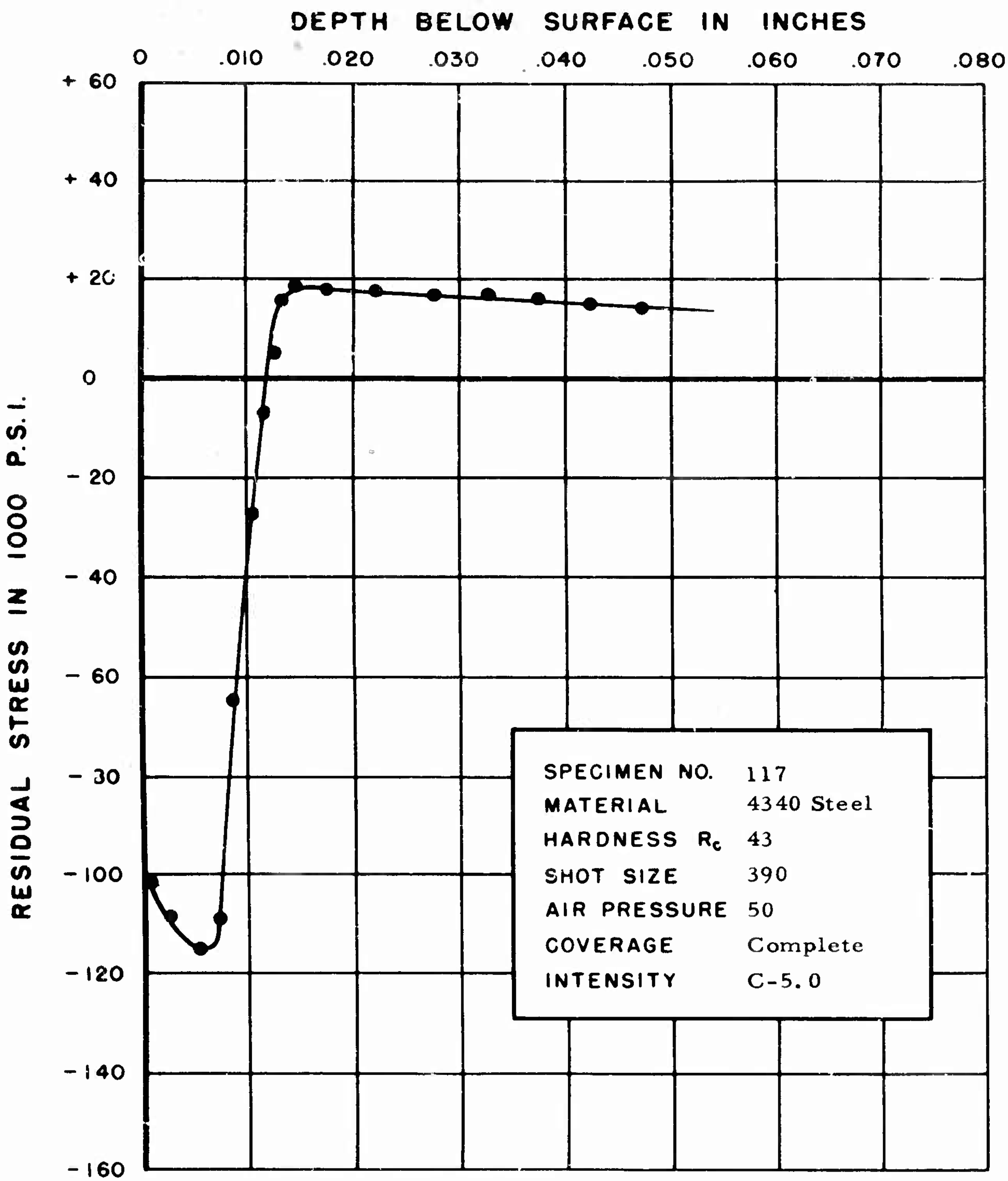


FIGURE 150. RESIDUAL STRESS DISTRIBUTION

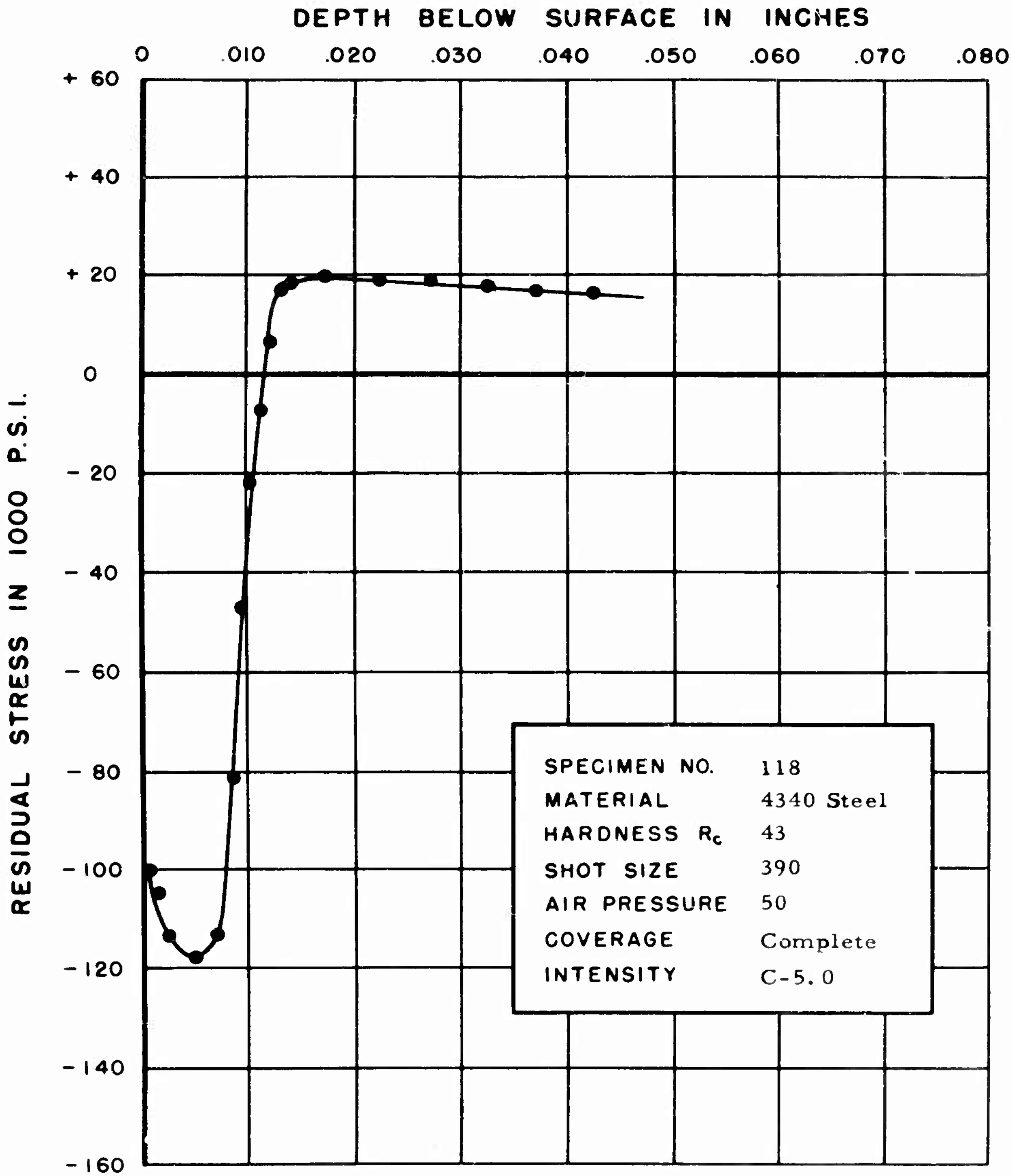


FIGURE 151. RESIDUAL STRESS DISTRIBUTION

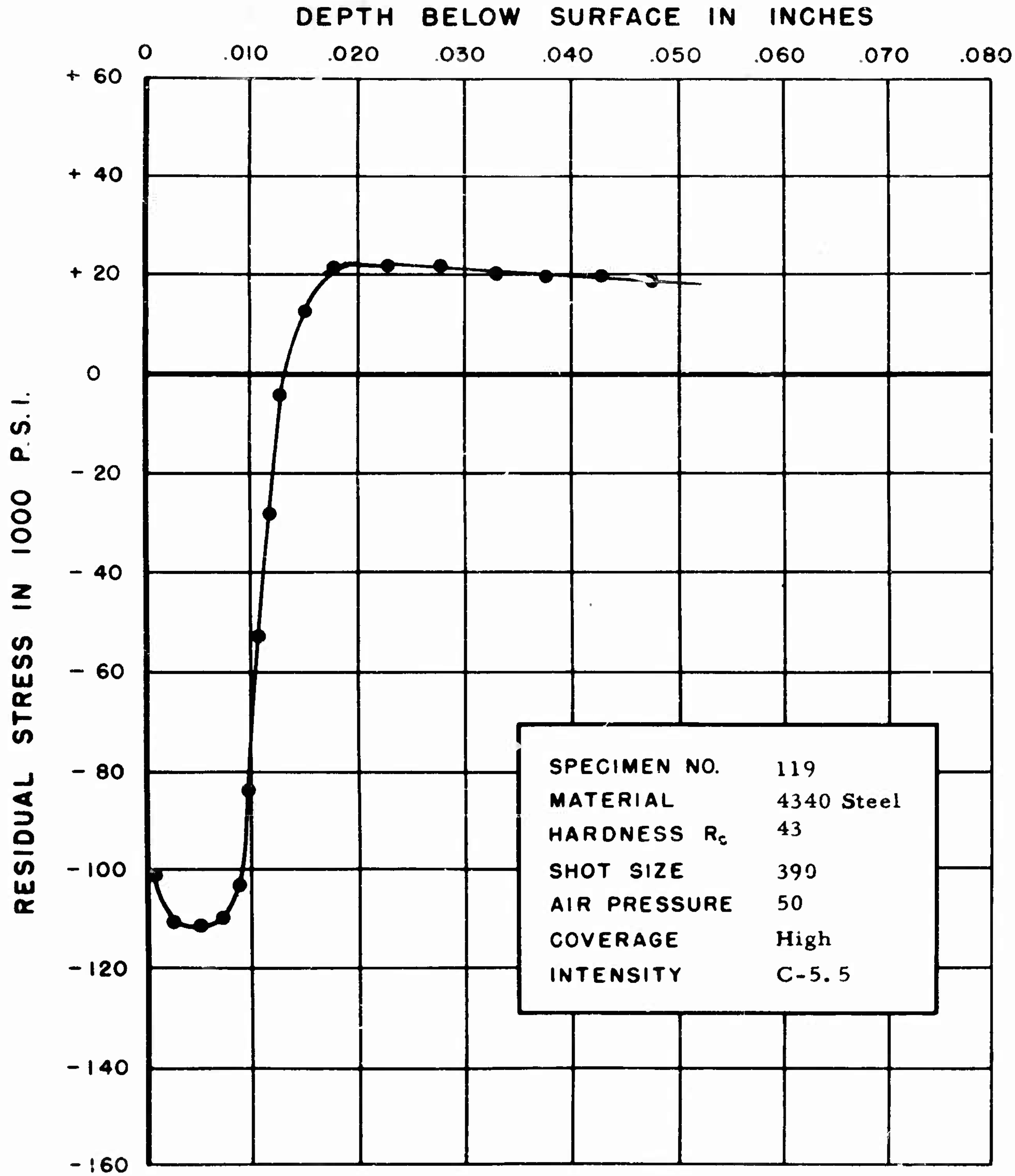


FIGURE 152. RESIDUAL STRESS DISTRIBUTION

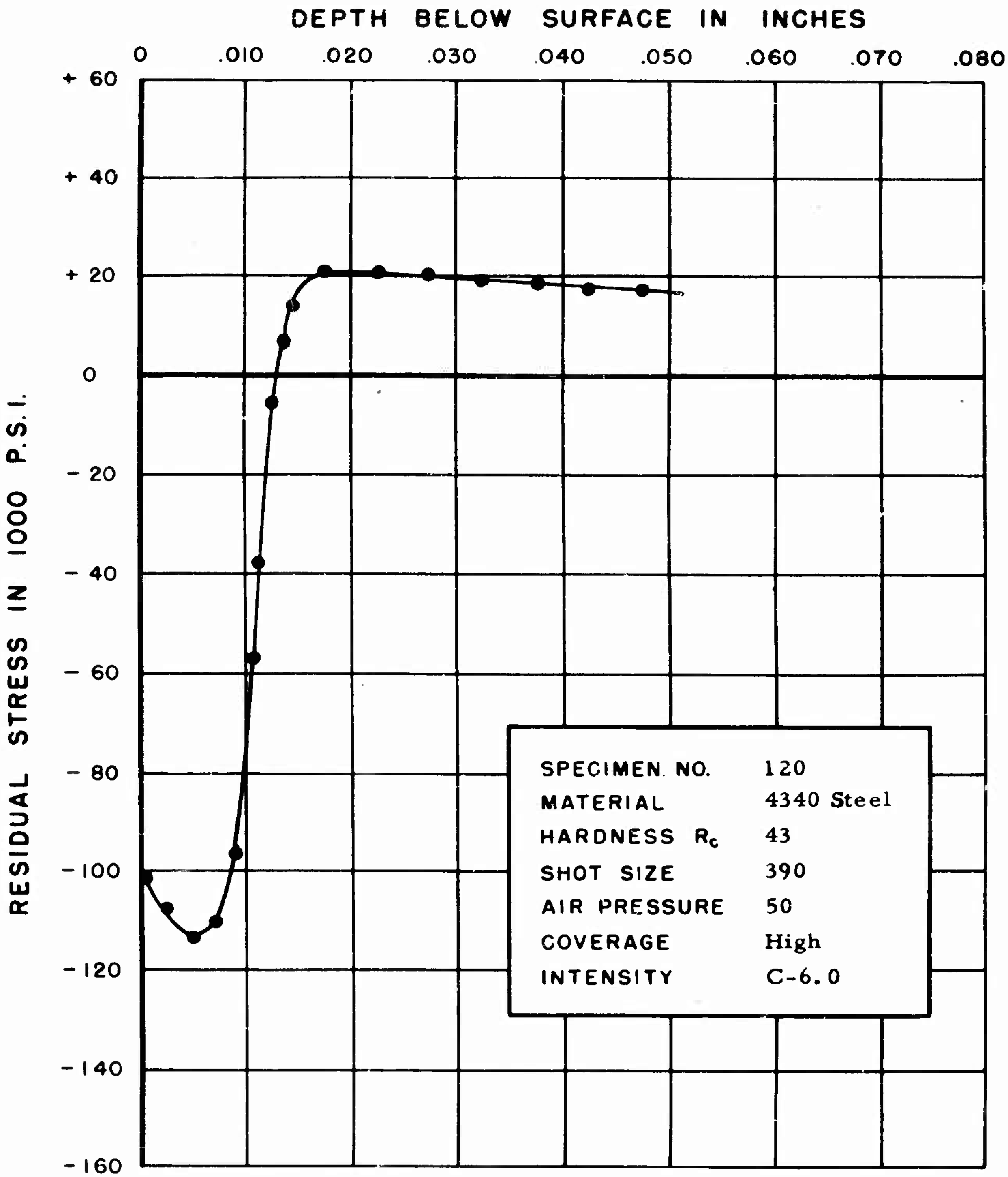


FIGURE 153. RESIDUAL STRESS DISTRIBUTION

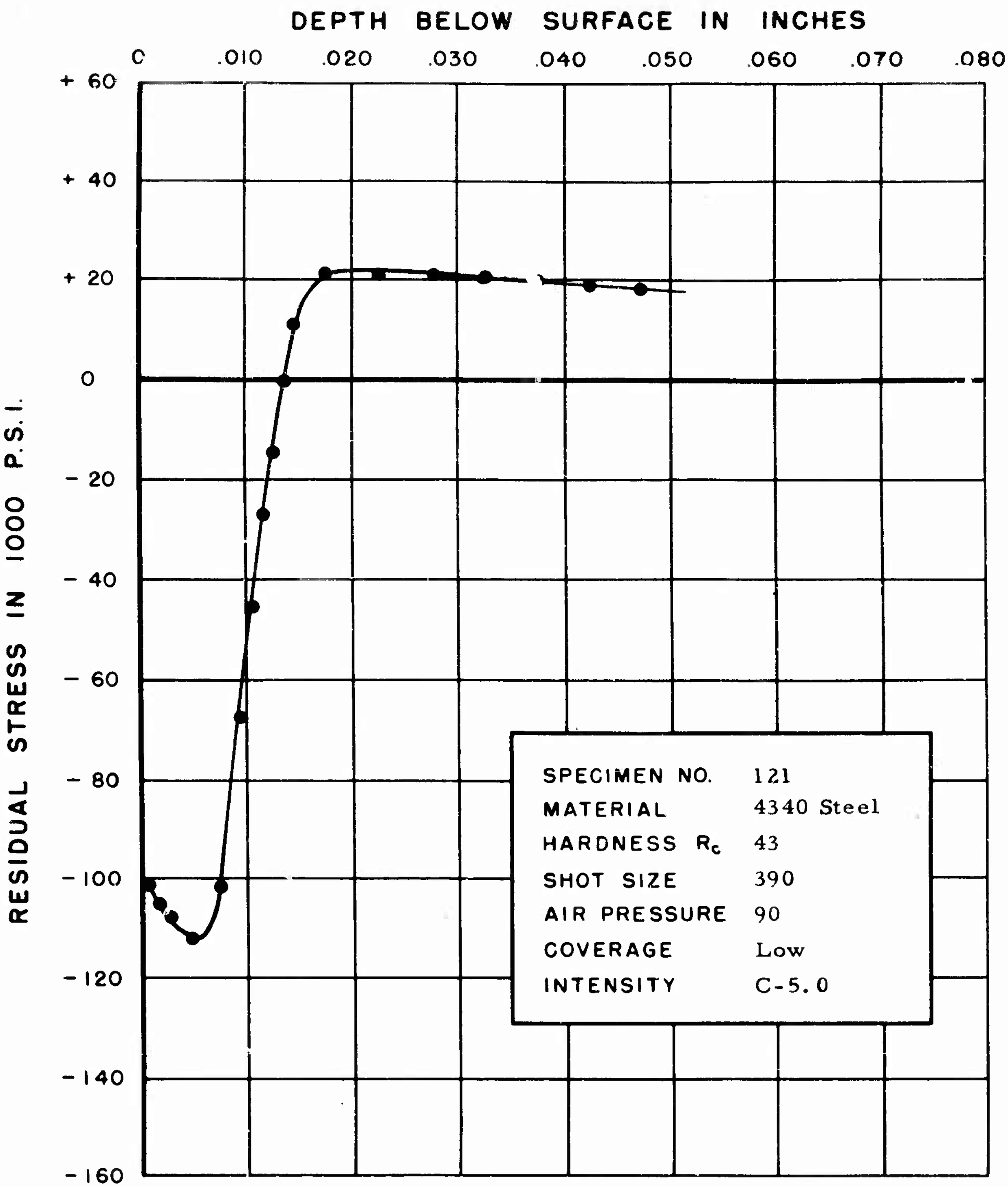


FIGURE 154. RESIDUAL STRESS DISTRIBUTION

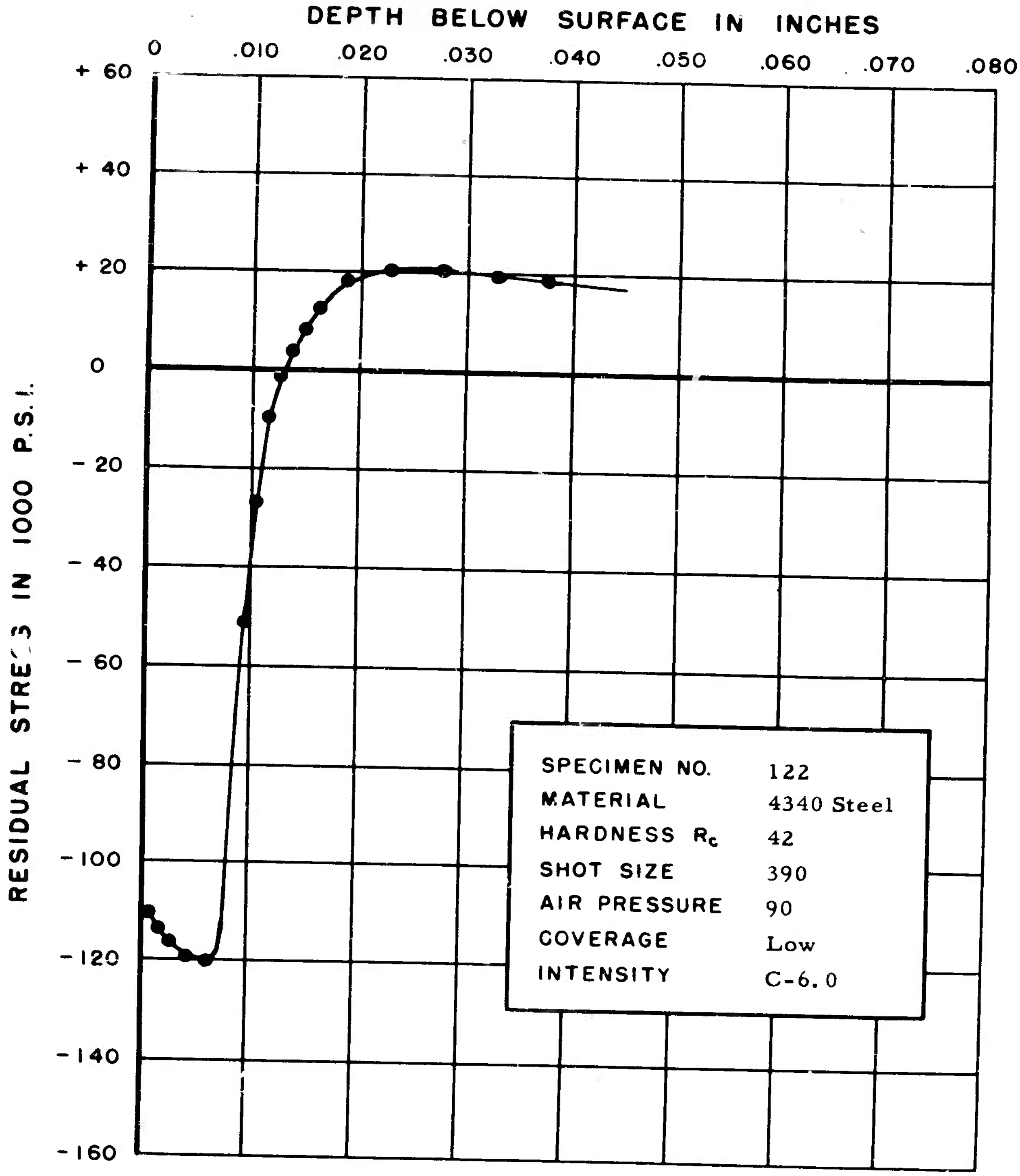


FIGURE 155. RESIDUAL STRESS DISTRIBUTION

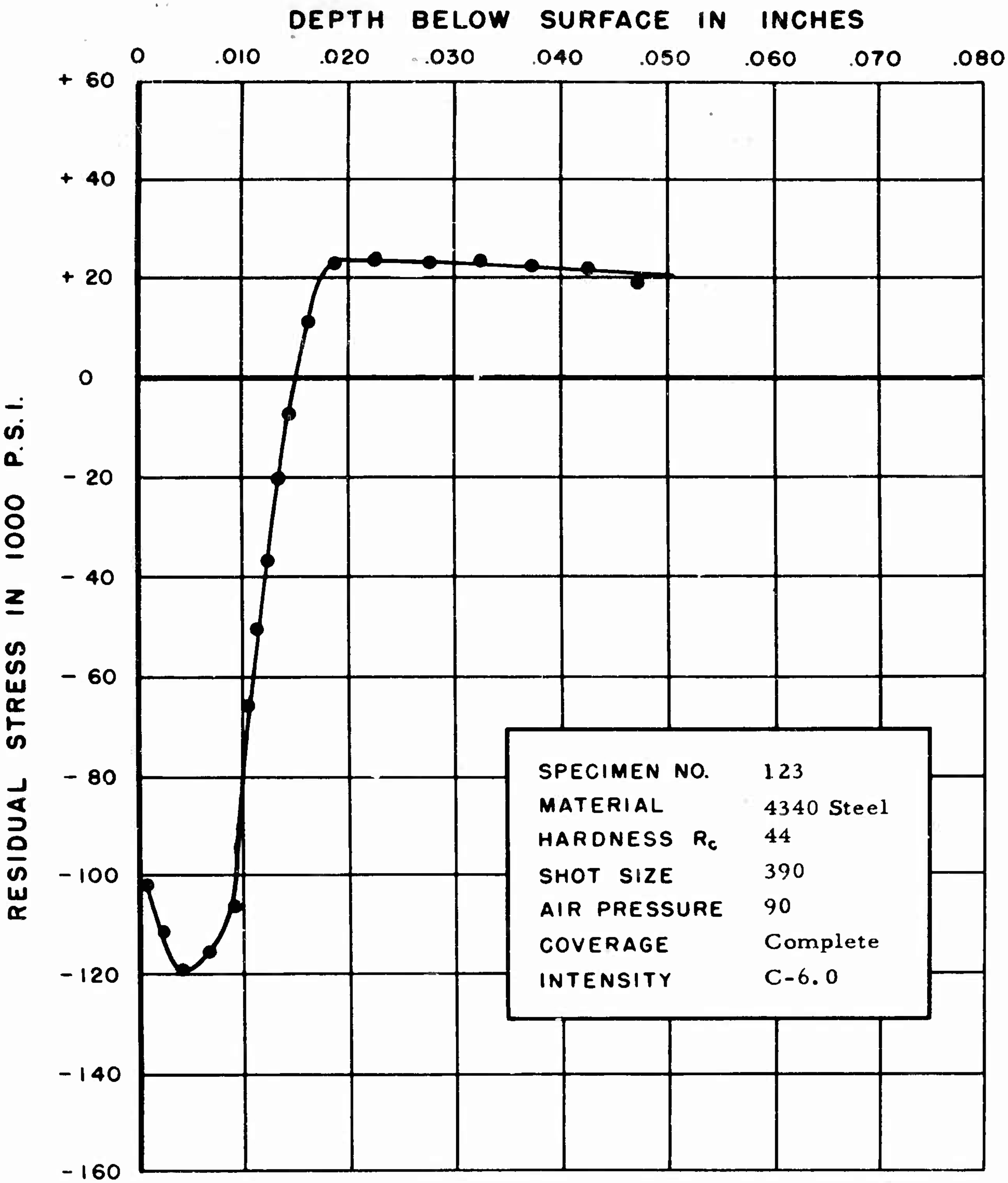


FIGURE 156. RESIDUAL STRESS DISTRIBUTION

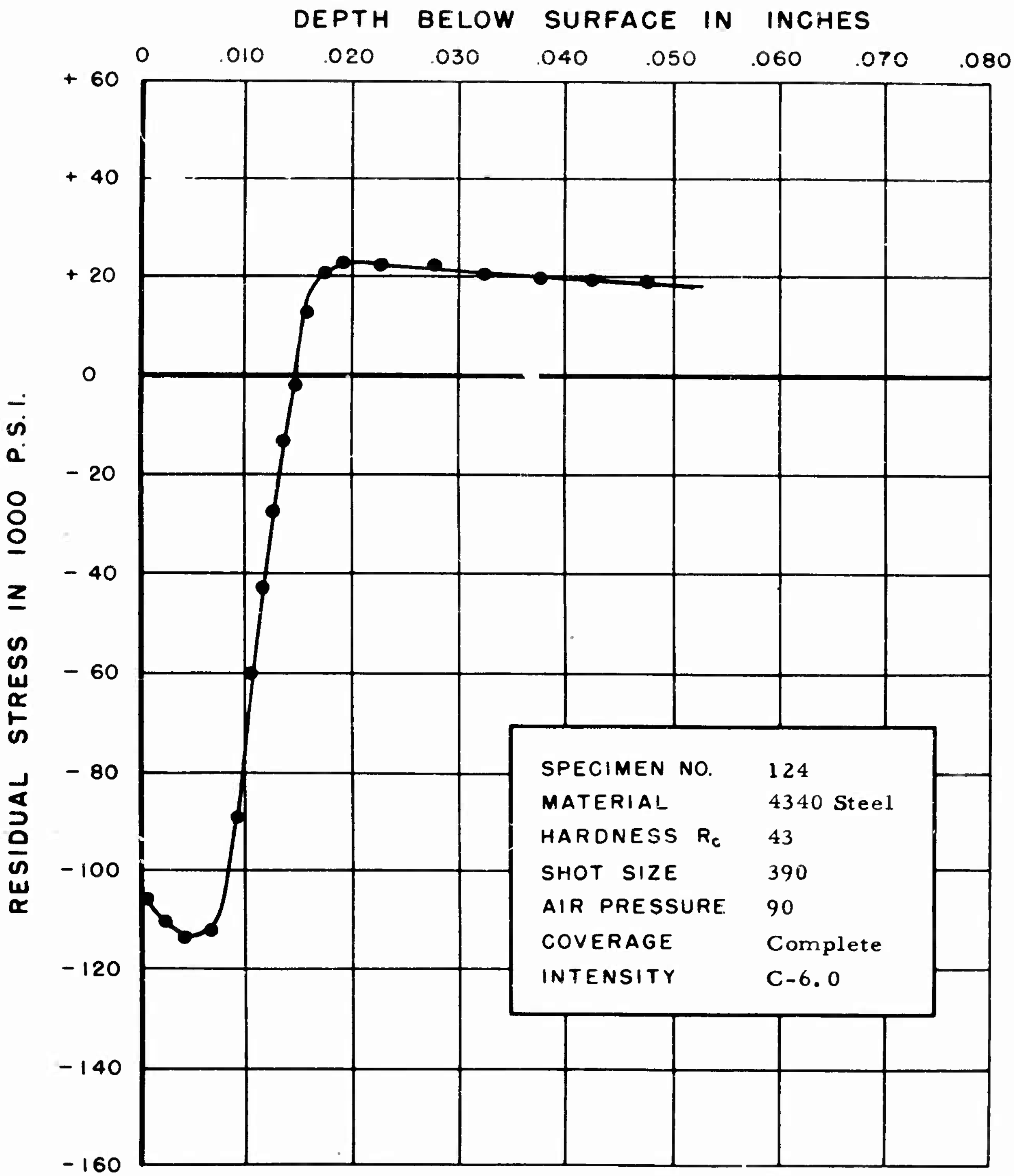


FIGURE 157. RESIDUAL STRESS DISTRIBUTION

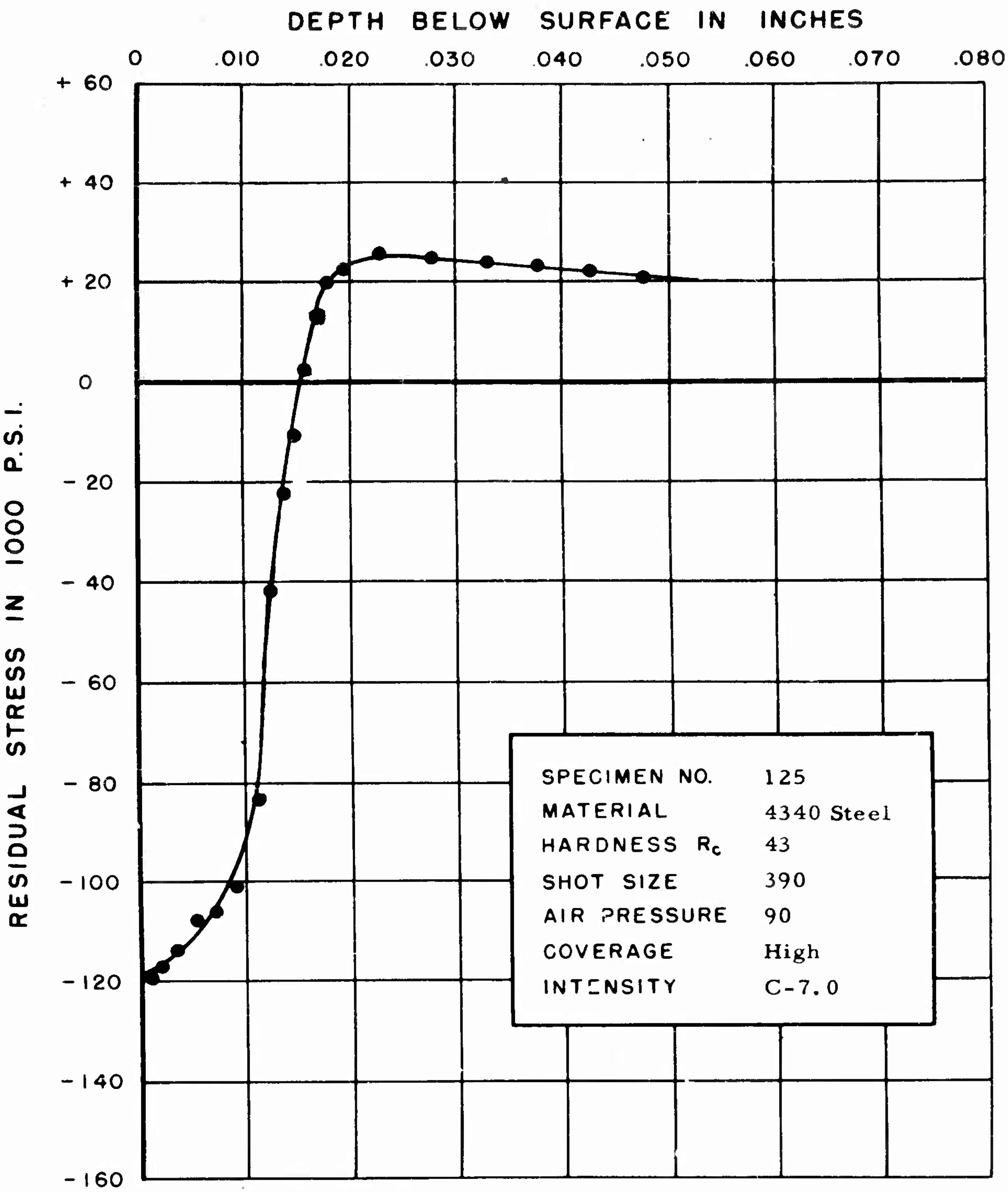
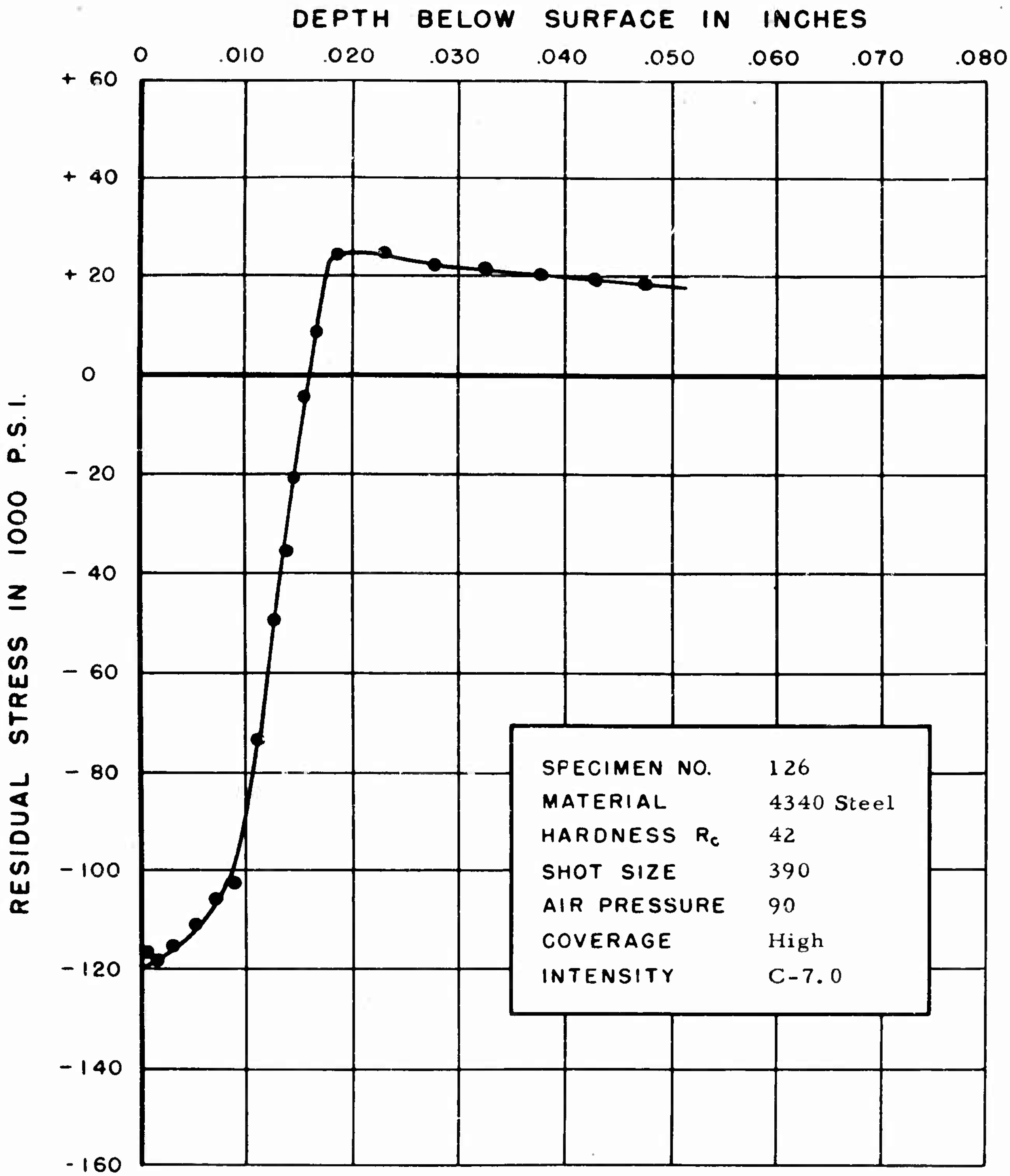


FIGURE 158. RESIDUAL STRESS DISTRIBUTION



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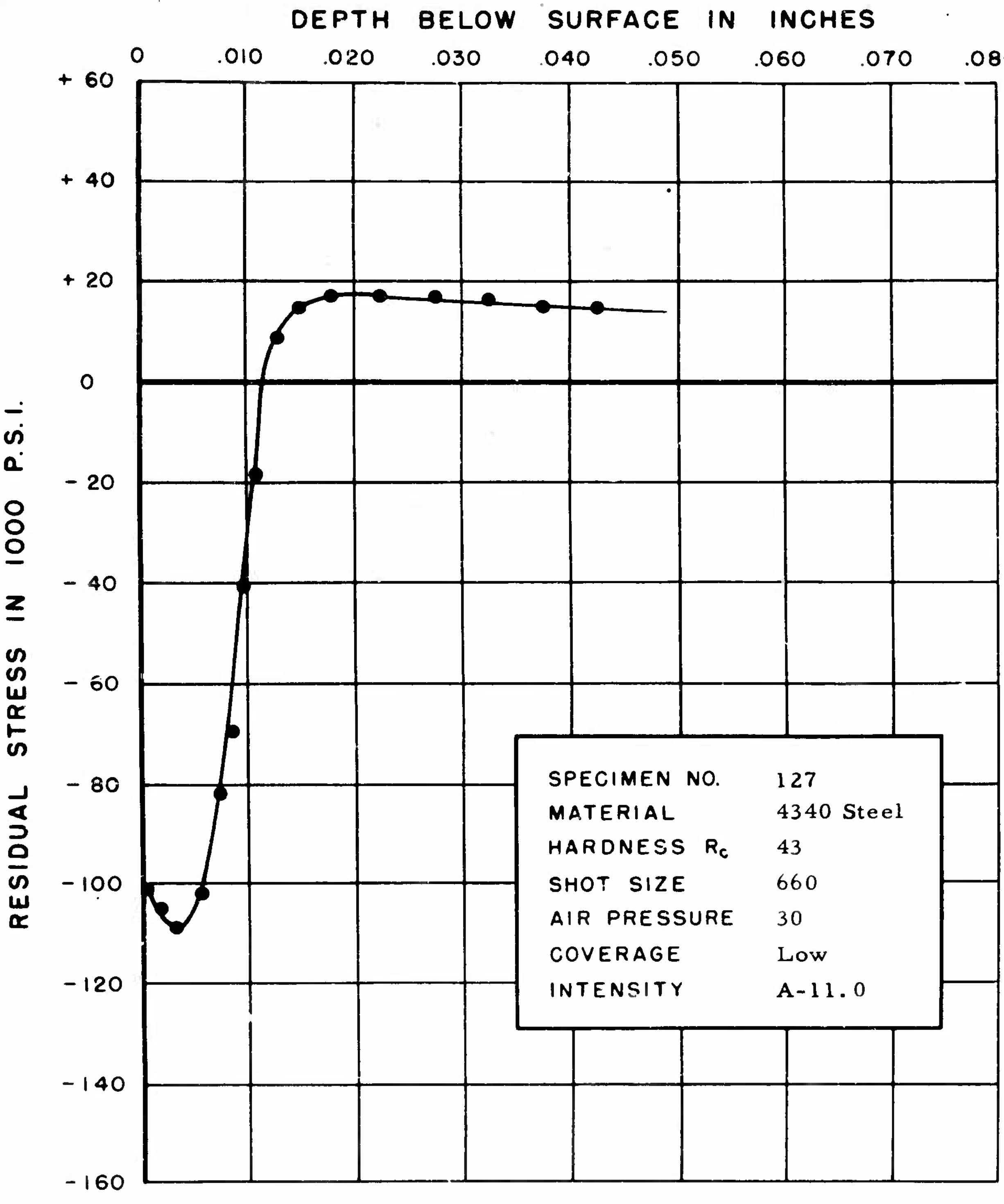
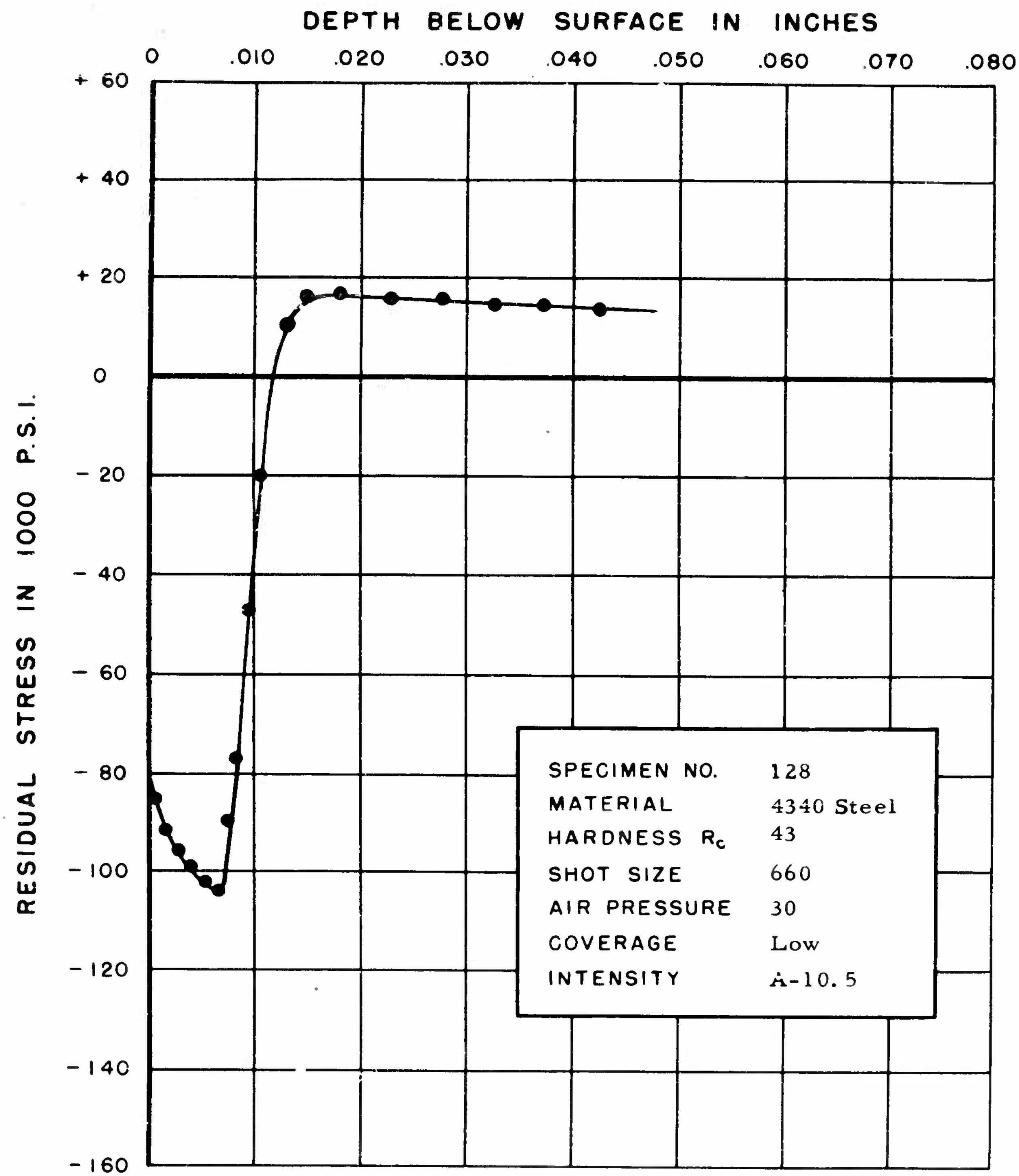


FIGURE 160. RESIDUAL STRESS DISTRIBUTION



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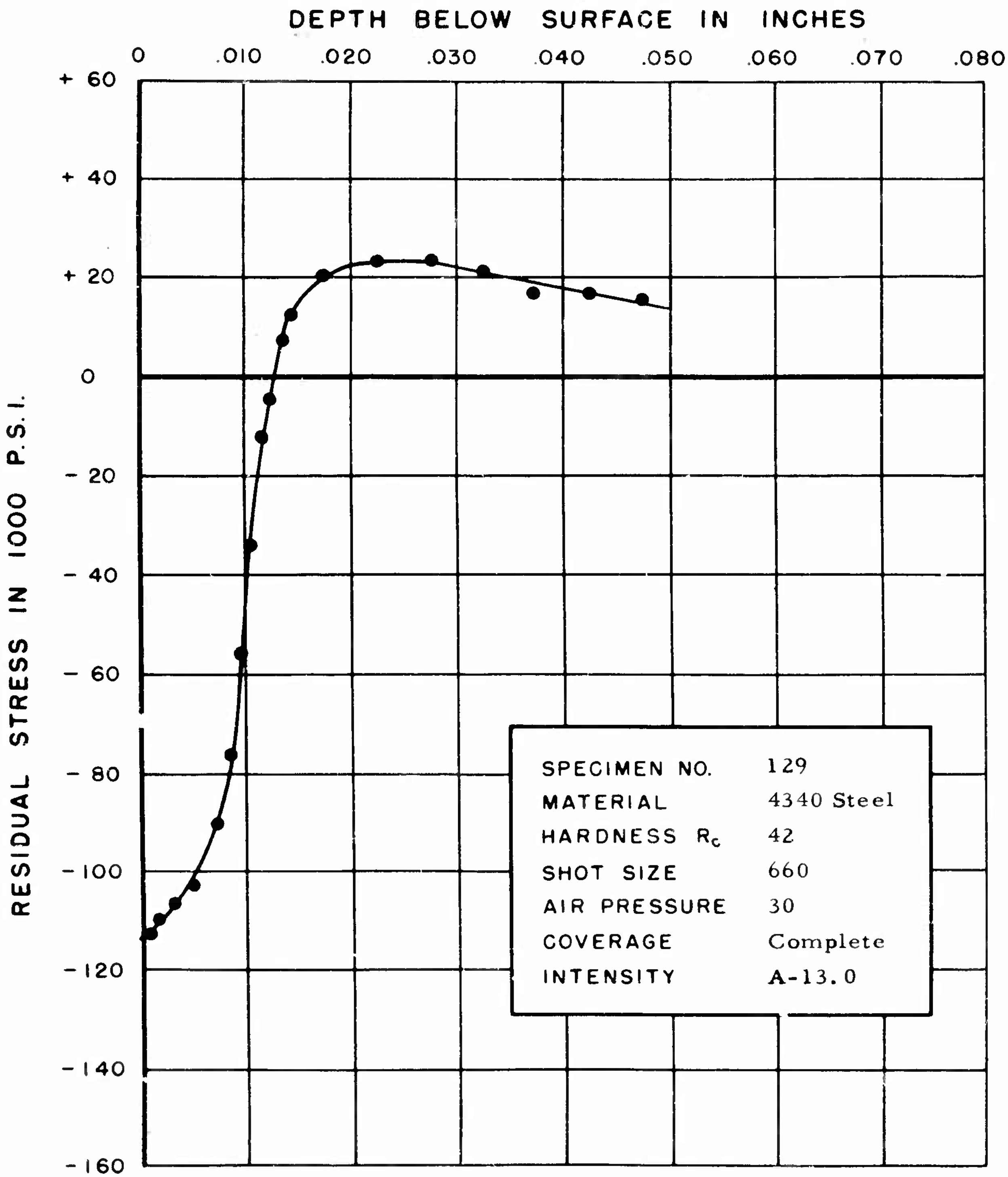


FIGURE 162. RESIDUAL STRESS DISTRIBUTION

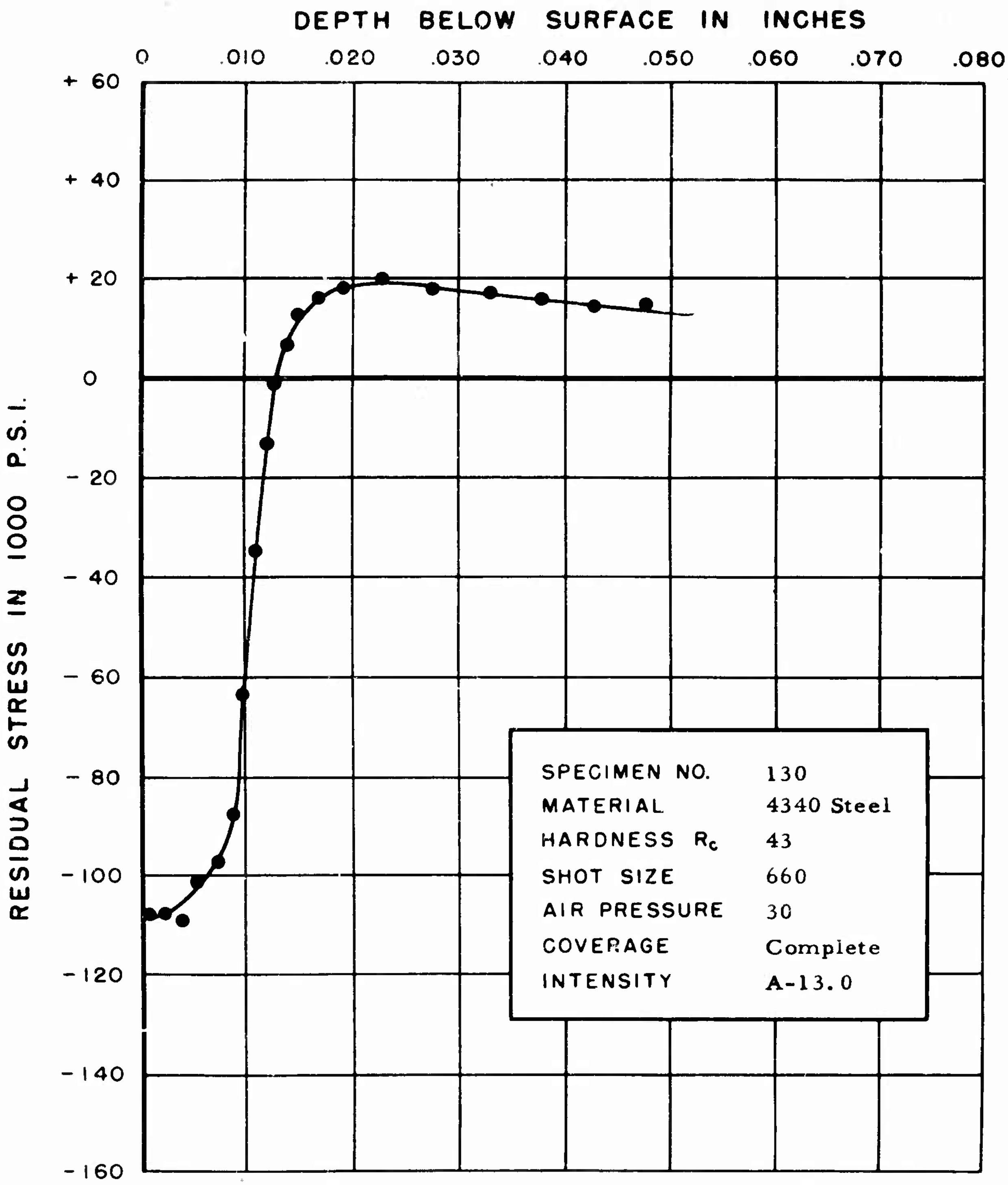


FIGURE 163. RESIDUAL STRESS DISTRIBUTION

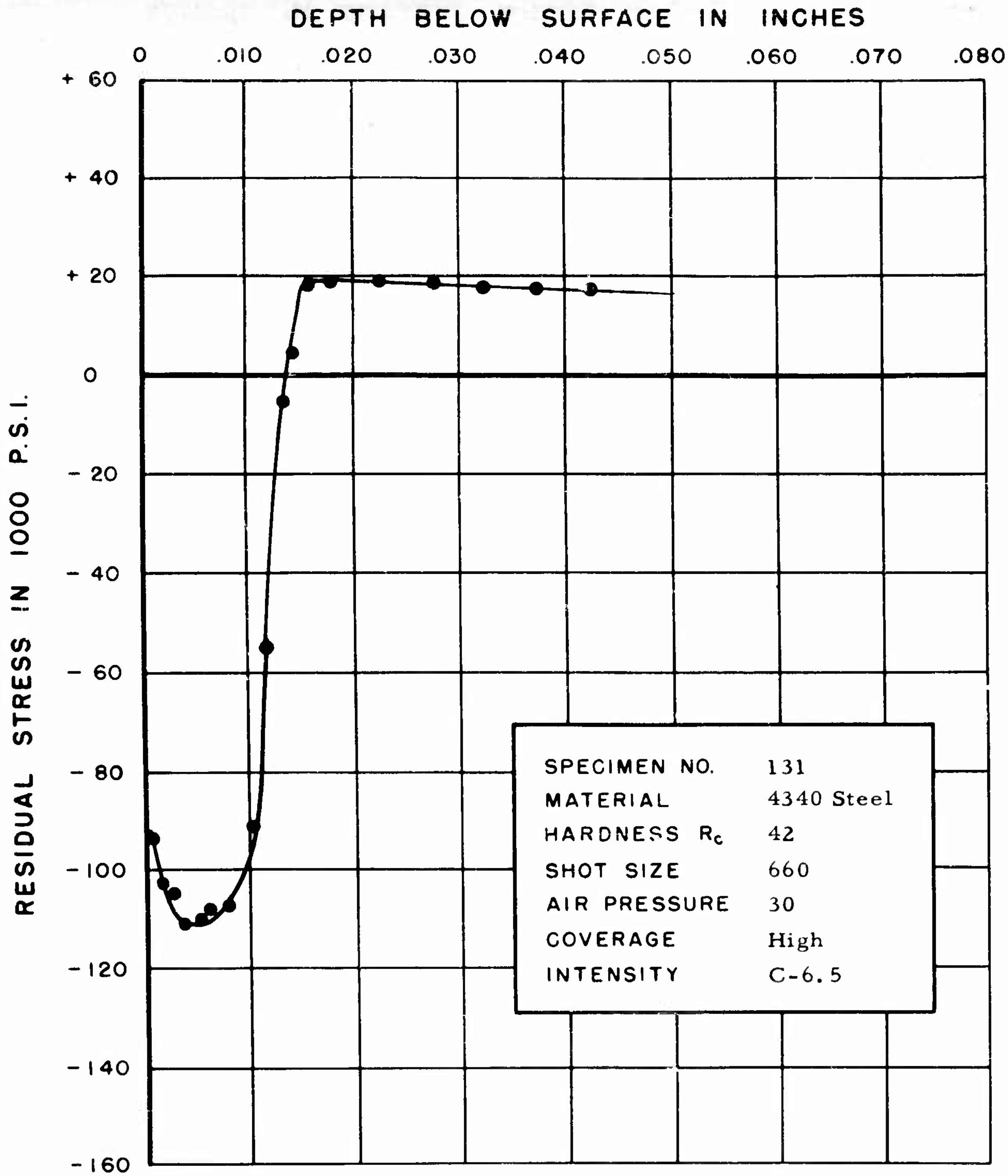


FIGURE 164. RESIDUAL STRESS DISTRIBUTION

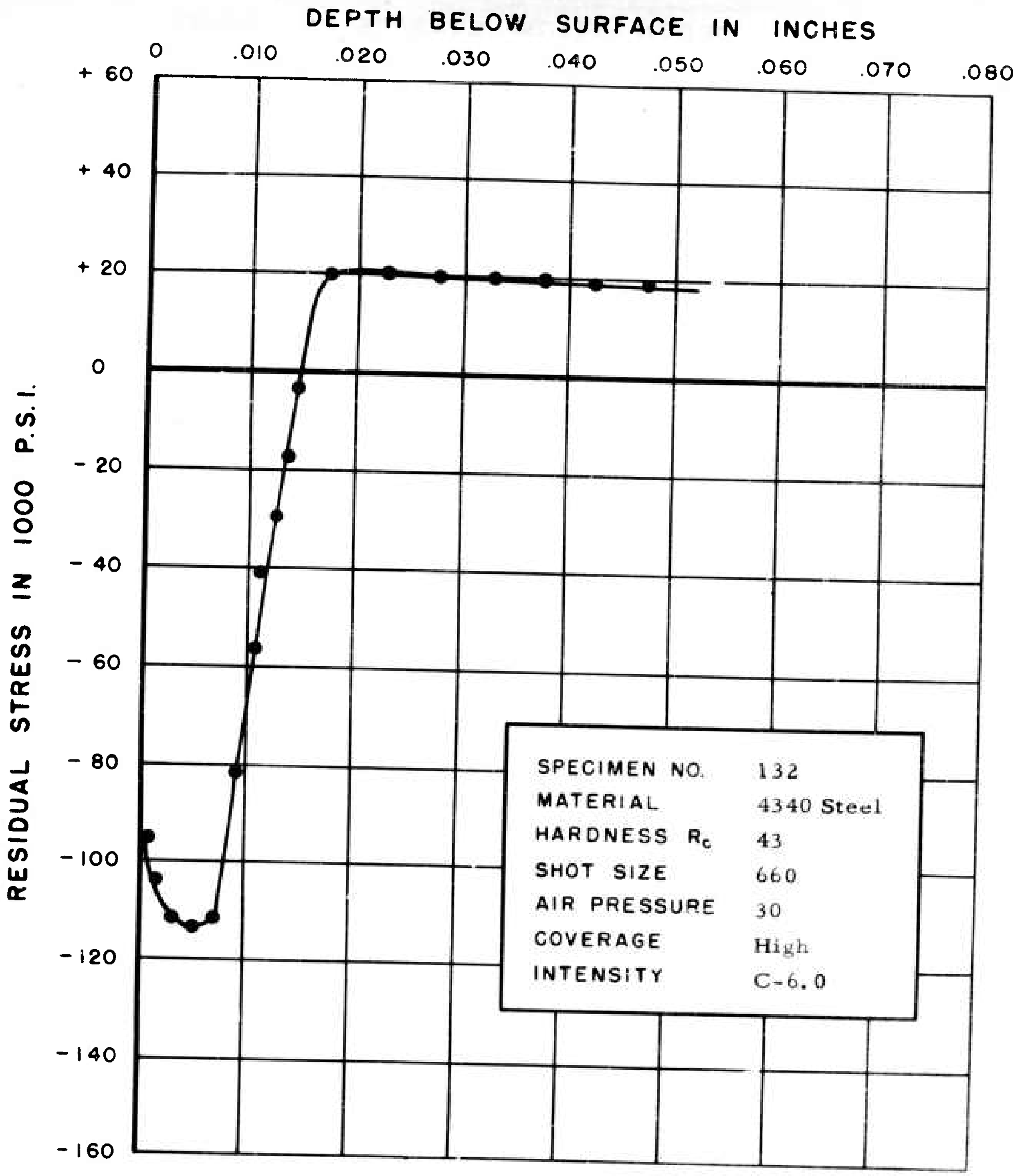


FIGURE 165. RESIDUAL STRESS DISTRIBUTION

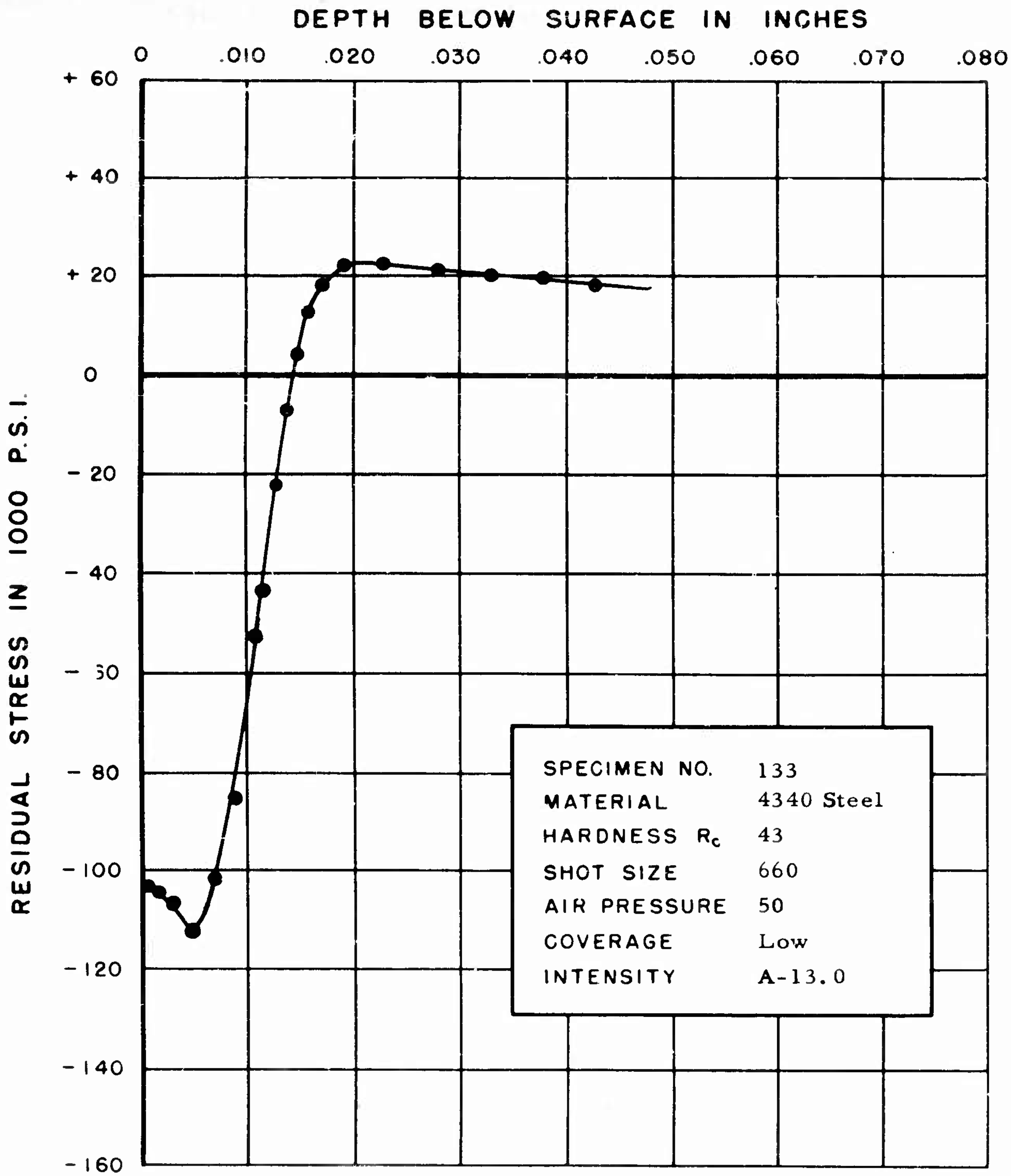


FIGURE 166. RESIDUAL STRESS DISTRIBUTION

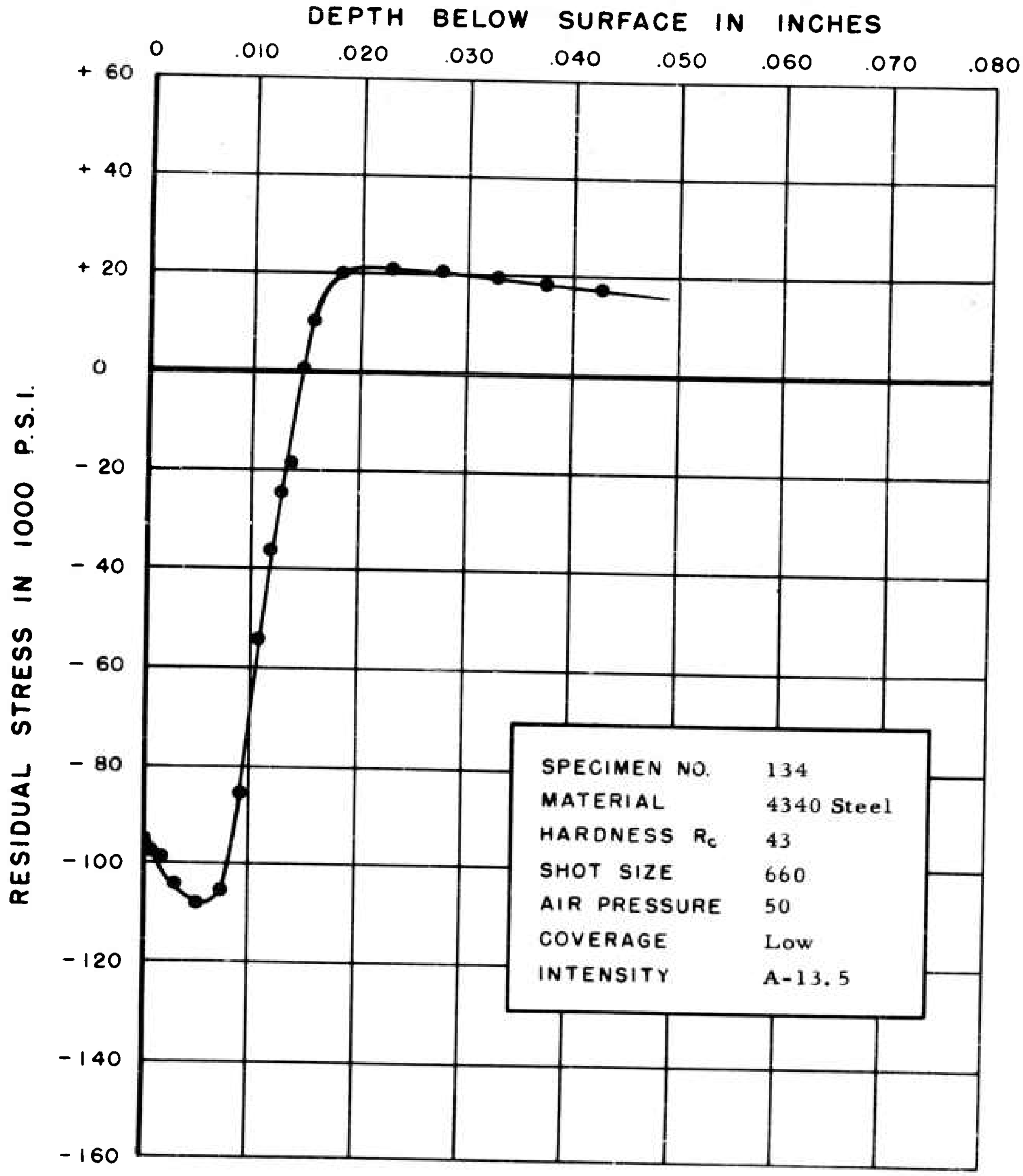


FIGURE 167. RESIDUAL STRESS DISTRIBUTION

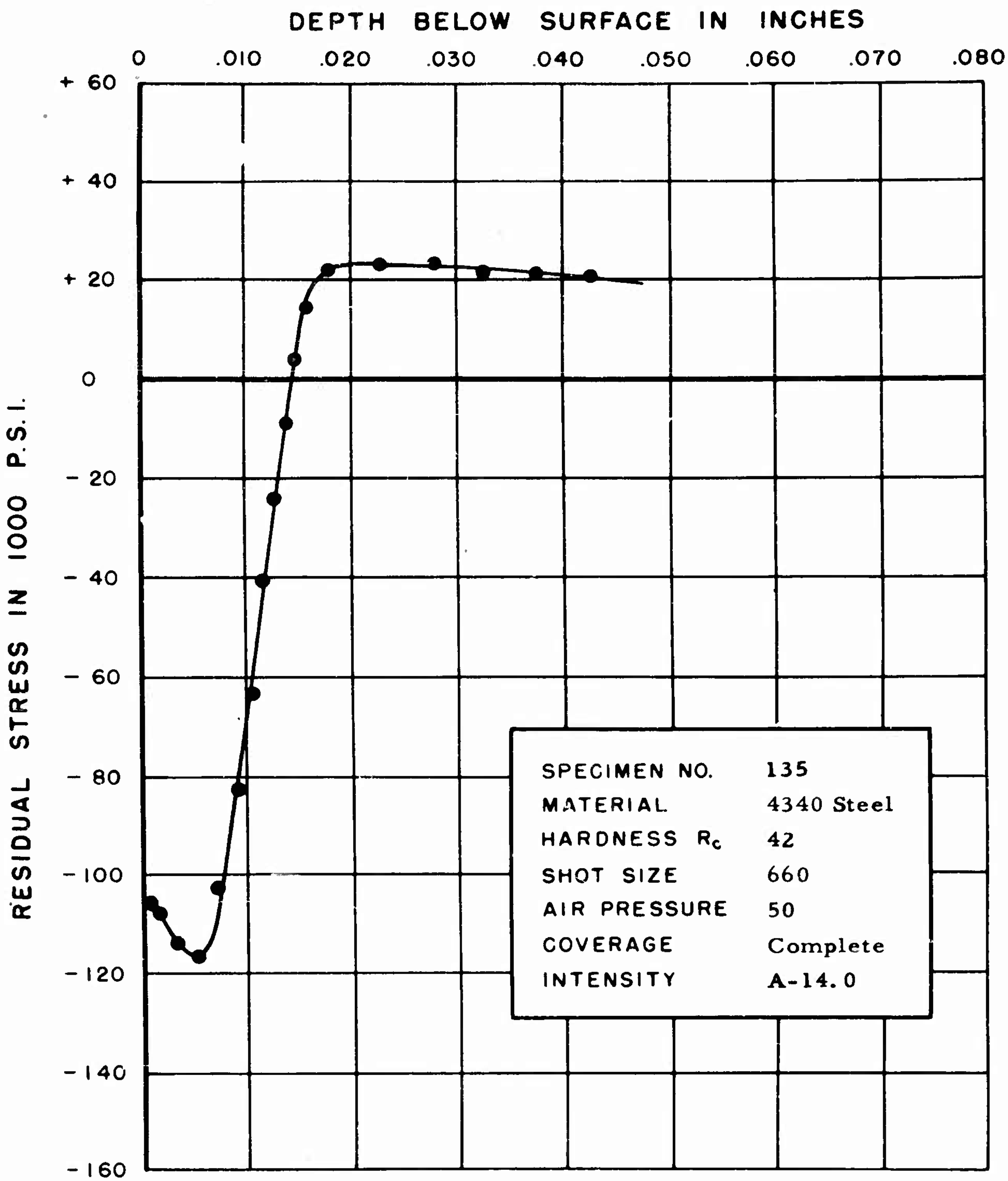


FIGURE 168. RESIDUAL STRESS DISTRIBUTION

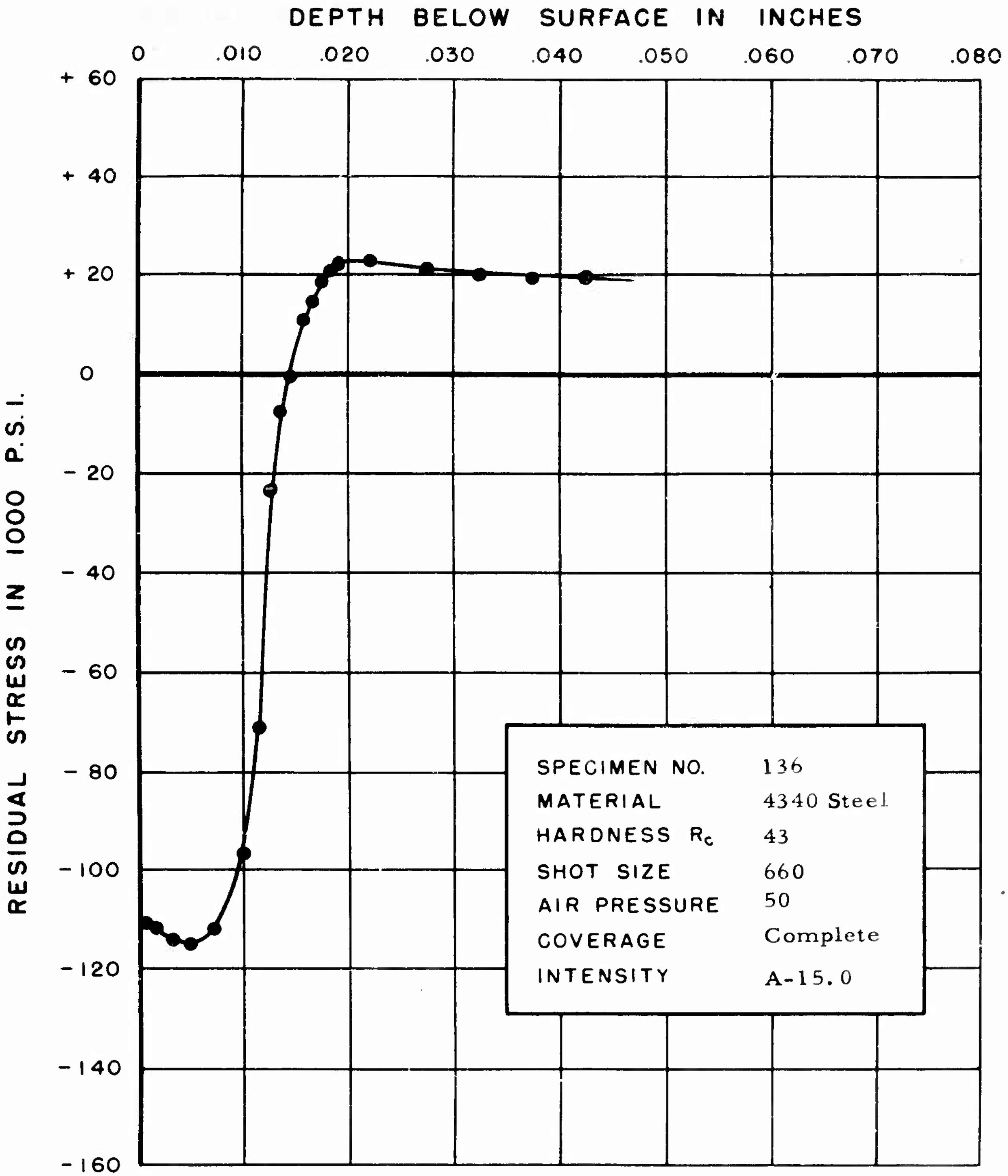


FIGURE 169. RESIDUAL STRESS DISTRIBUTION

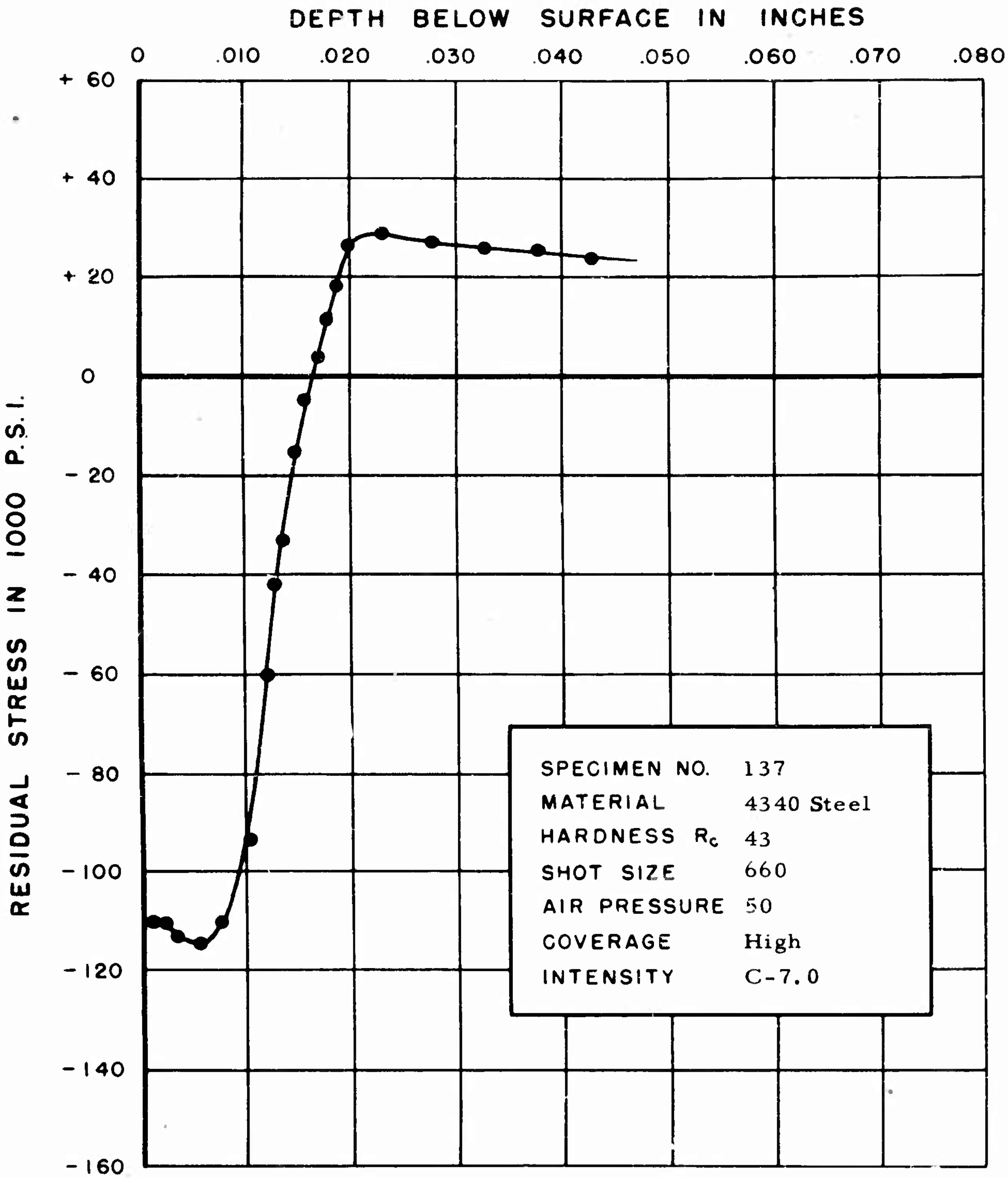


FIGURE 170. RESIDUAL STRESS DISTRIBUTION

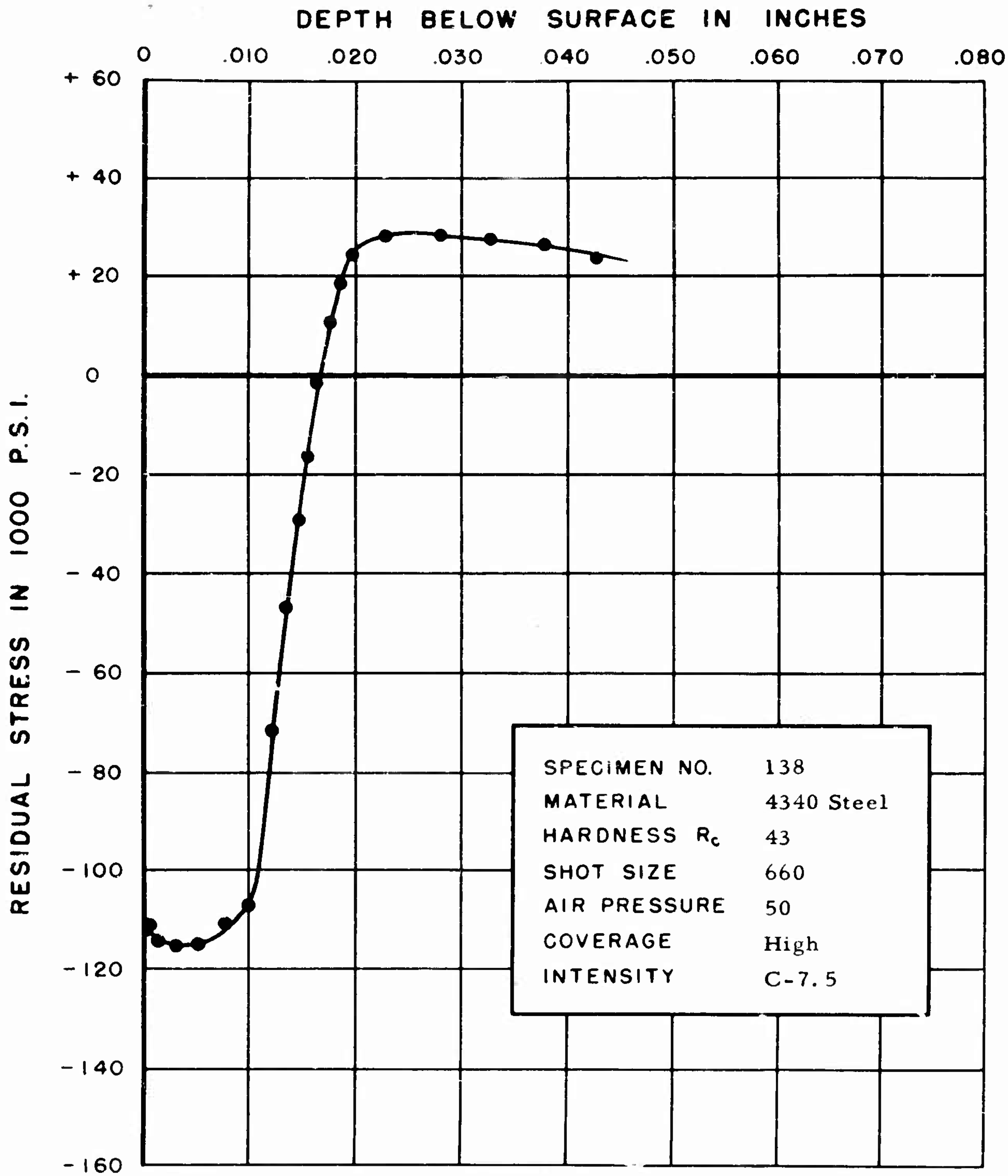


FIGURE 171. RESIDUAL STRESS DISTRIBUTION

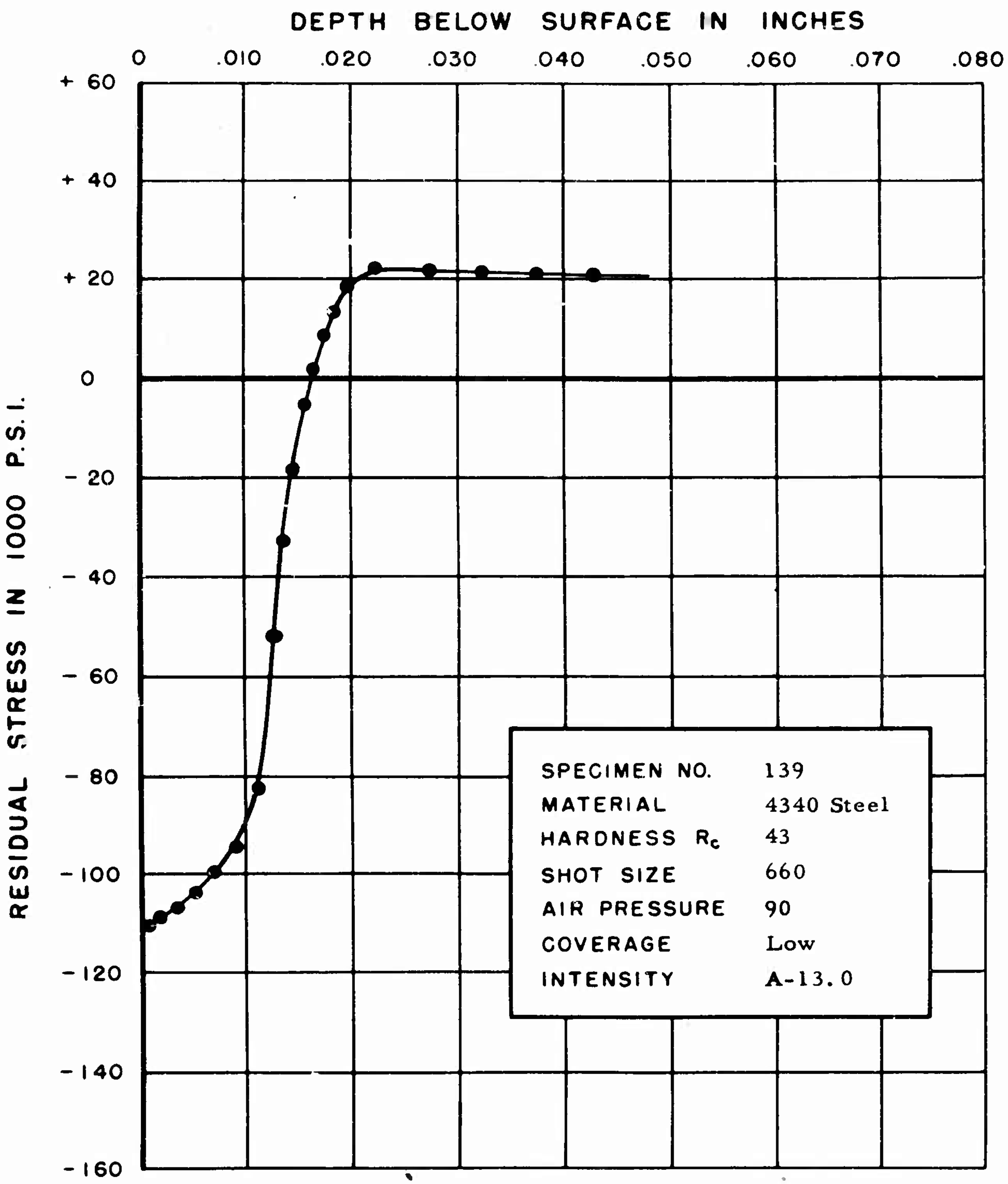


FIGURE 172. RESIDUAL STRESS DISTRIBUTION

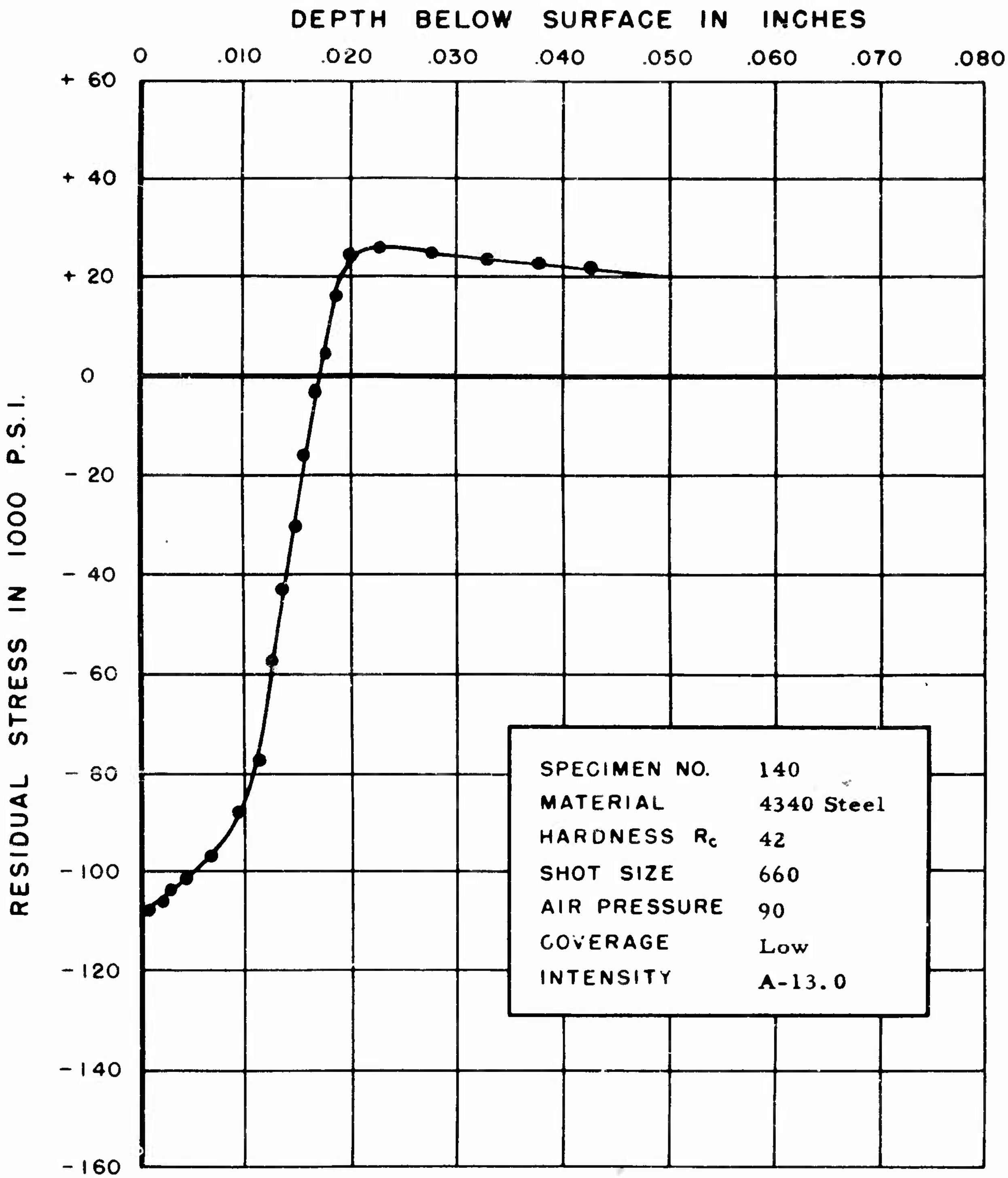


FIGURE 173. RESIDUAL STRESS DISTRIBUTION

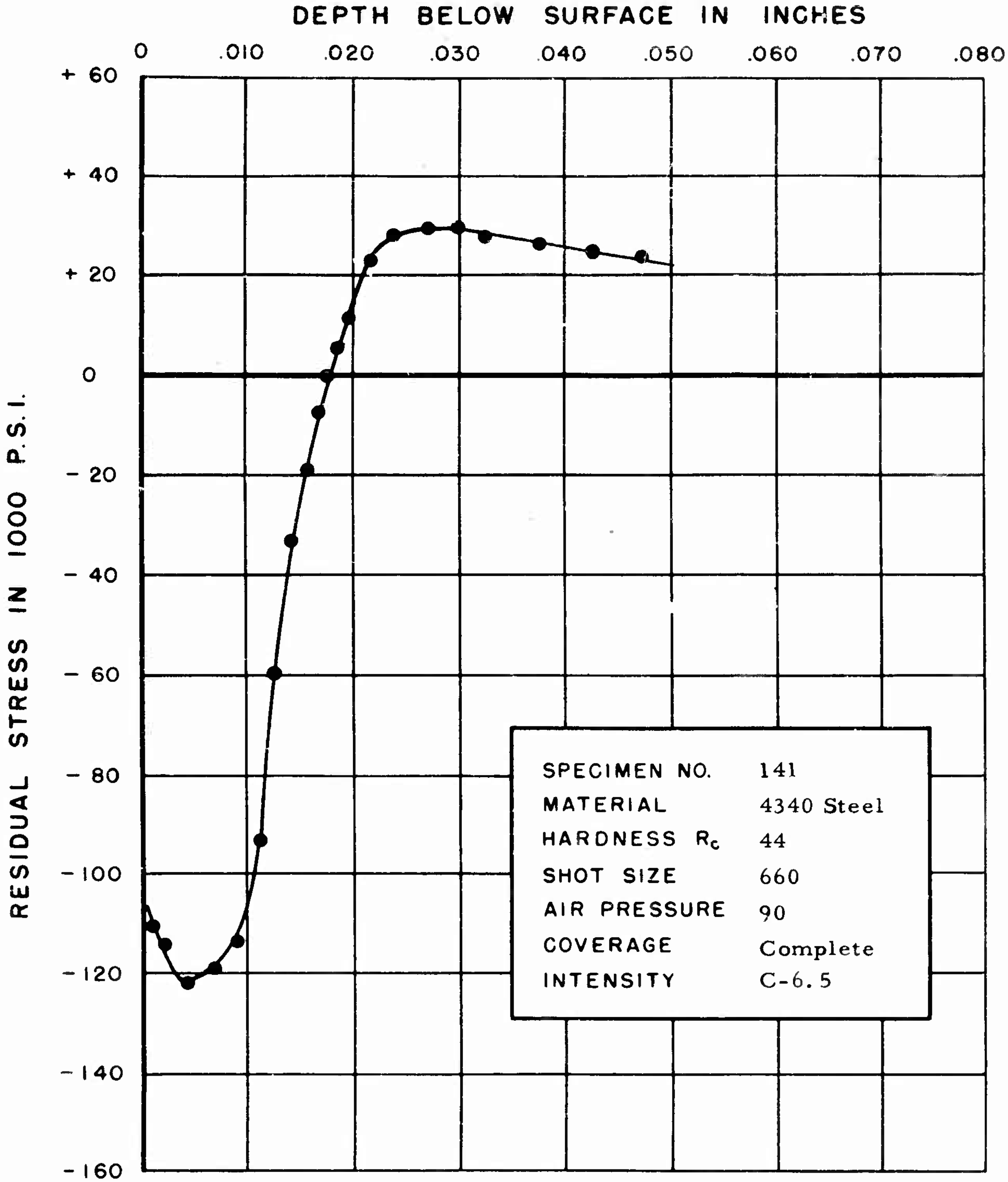


FIGURE 174. RESIDUAL STRESS DISTRIBUTION

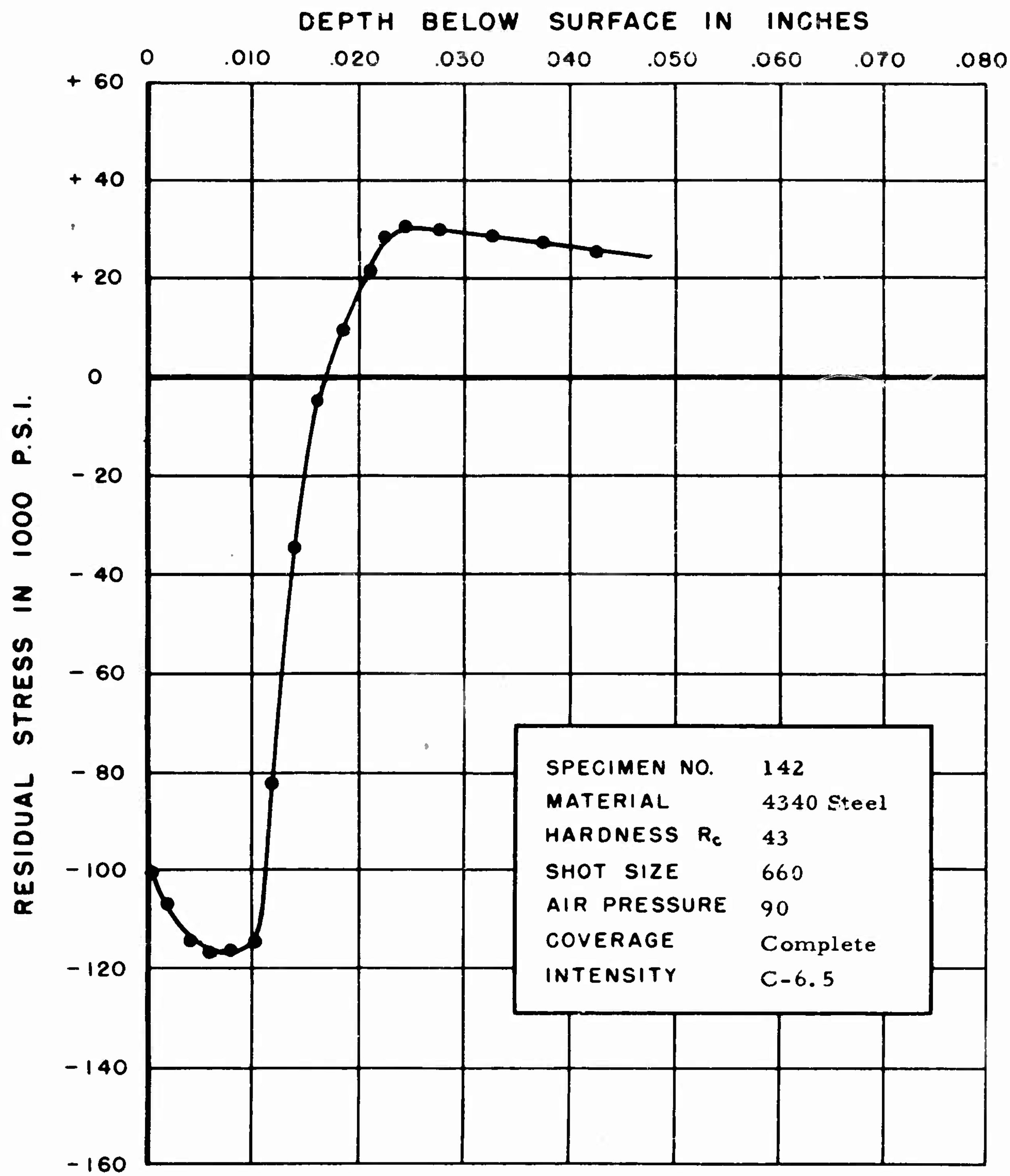


FIGURE 175. RESIDUAL STRESS DISTRIBUTION

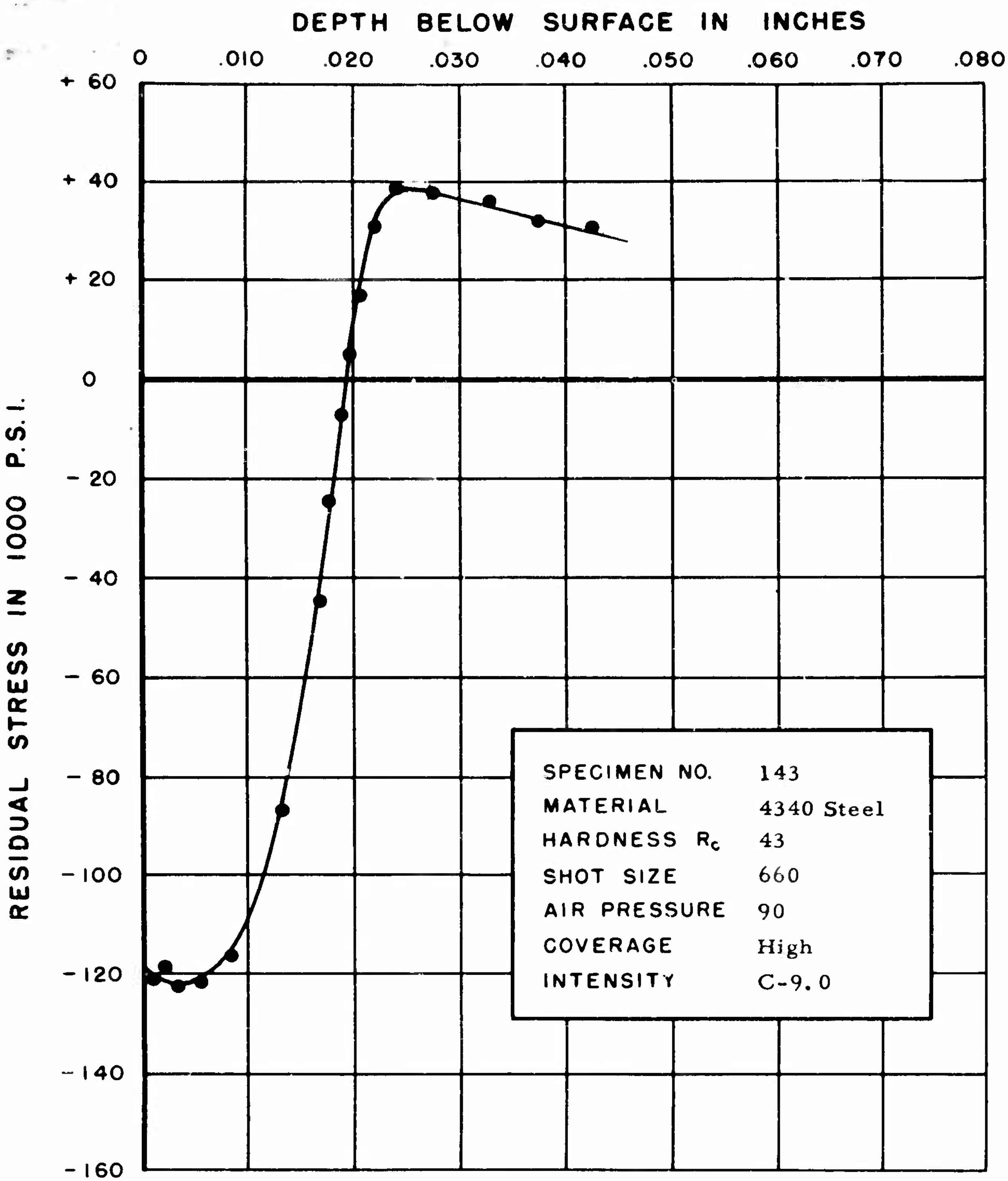


FIGURE 176. RESIDUAL STRESS DISTRIBUTION

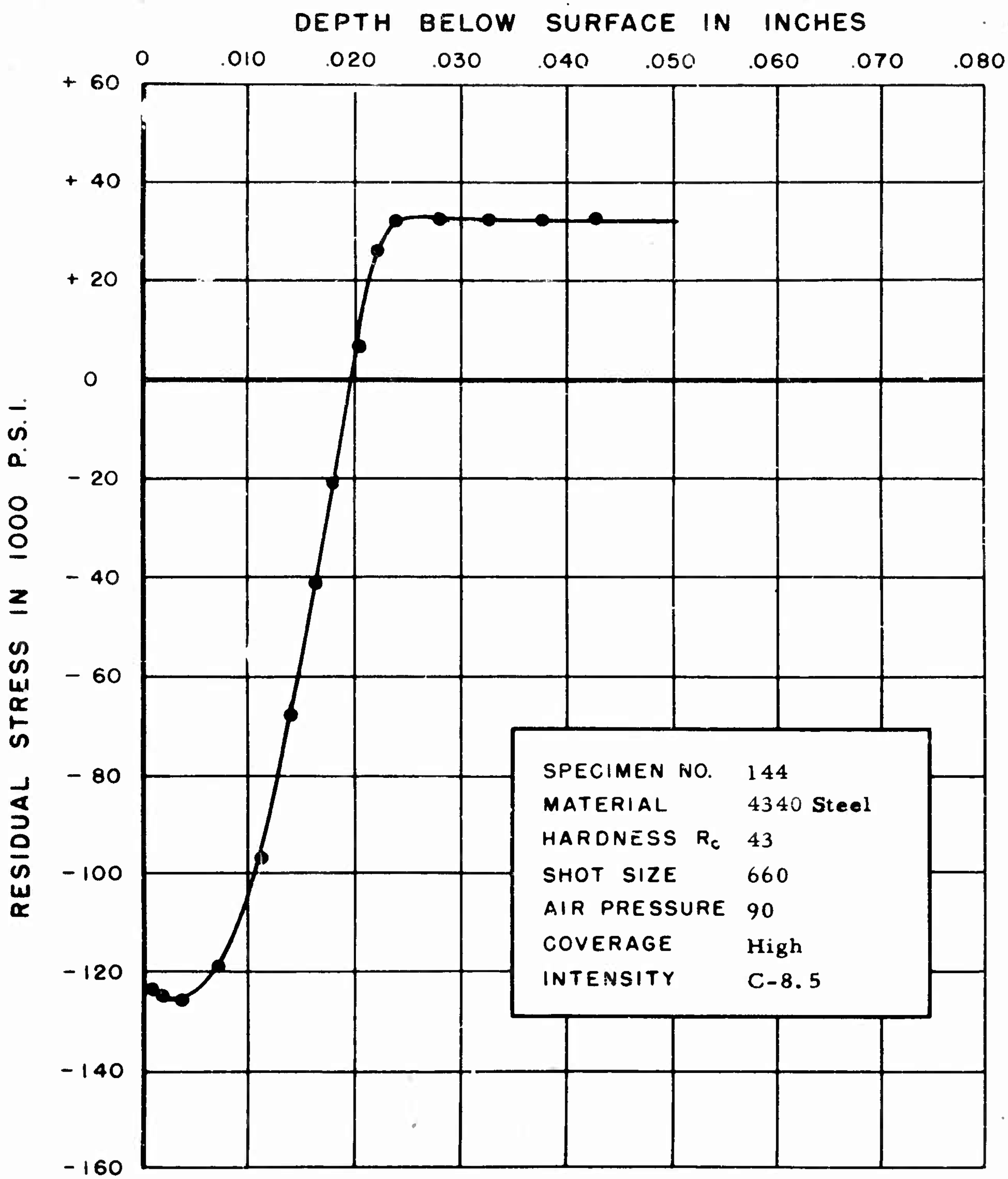


FIGURE 177. RESIDUAL STRESS DISTRIBUTION

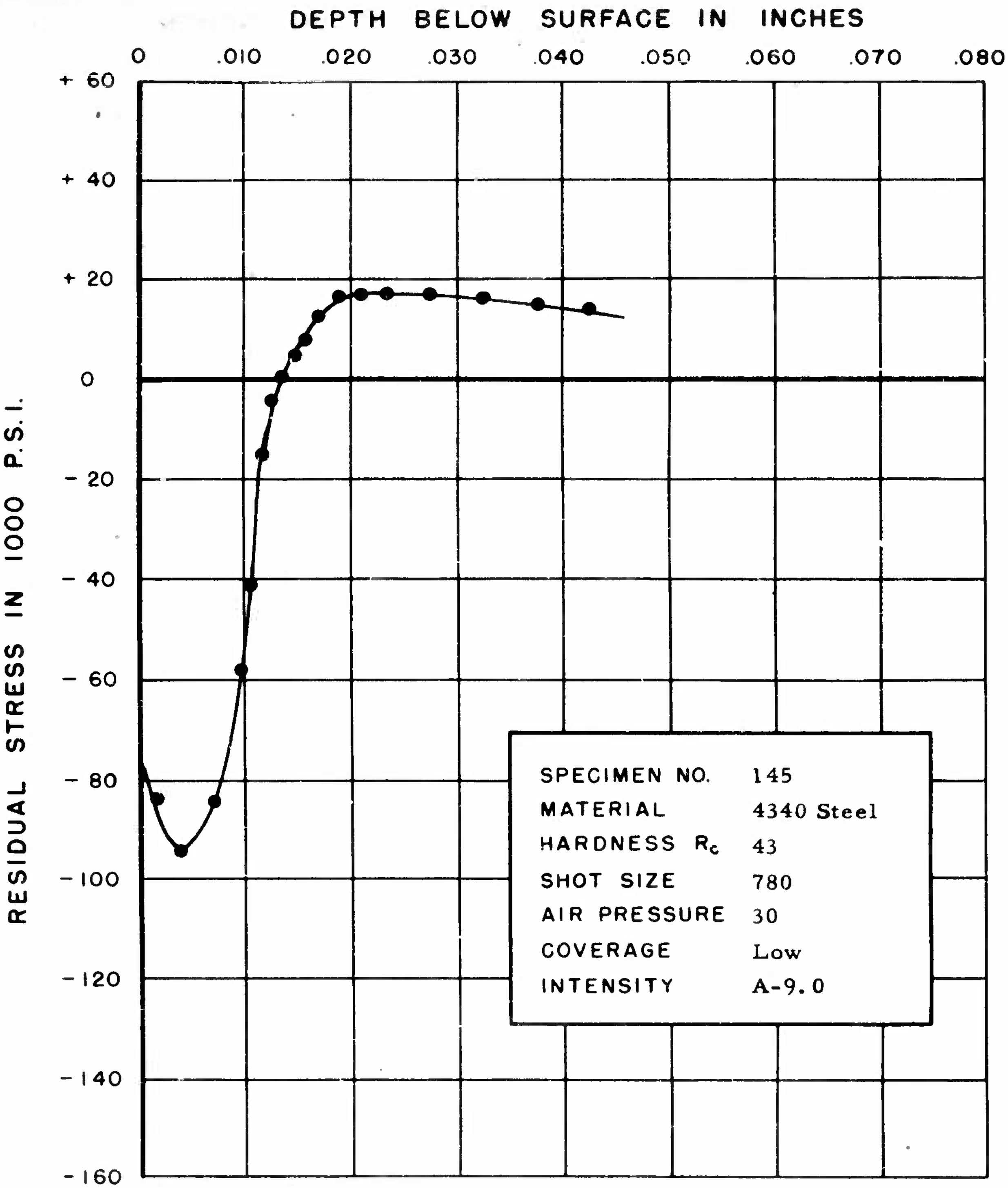


FIGURE 178. RESIDUAL STRESS DISTRIBUTION

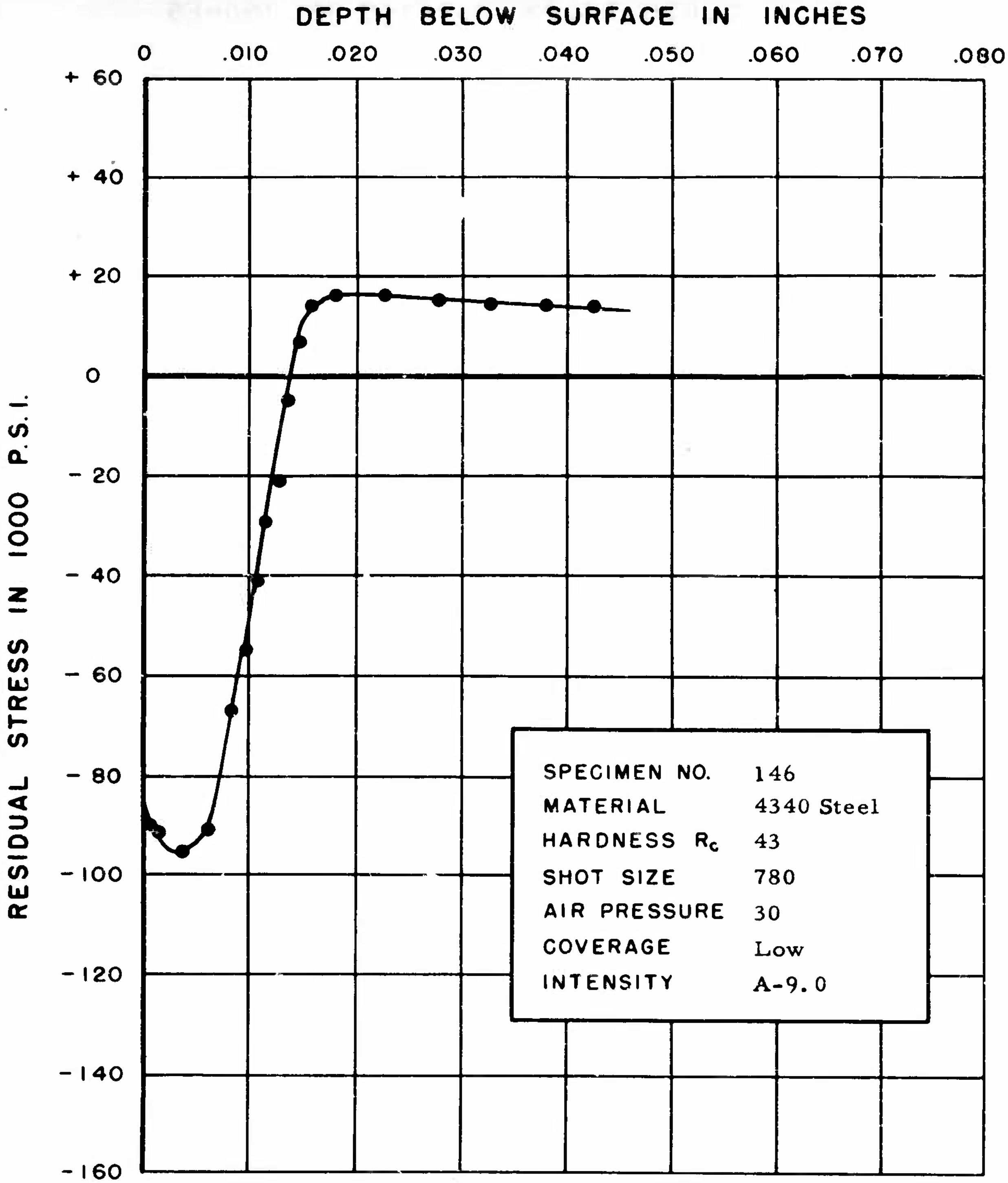
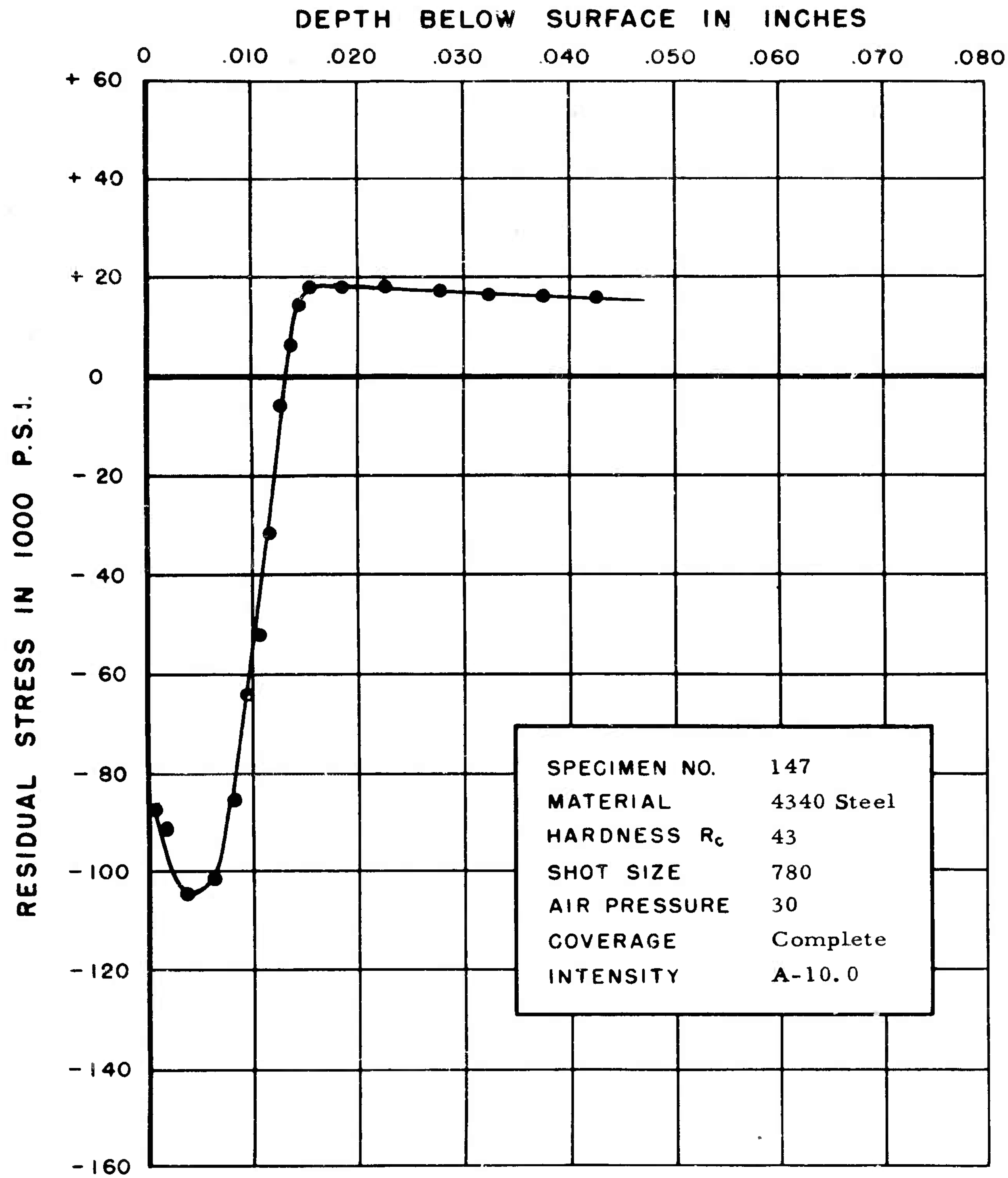


FIGURE 179. RESIDUAL STRESS DISTRIBUTION



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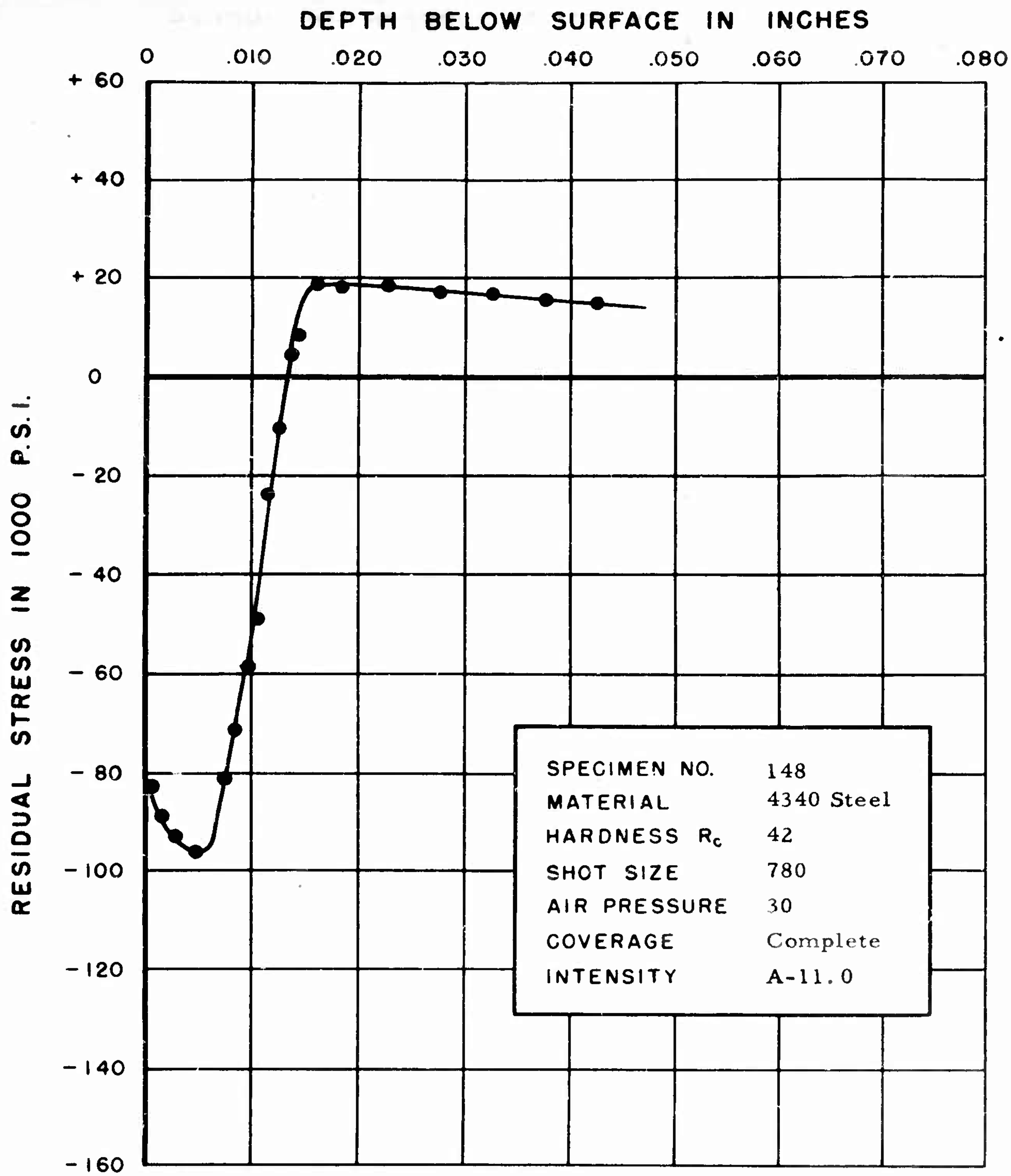
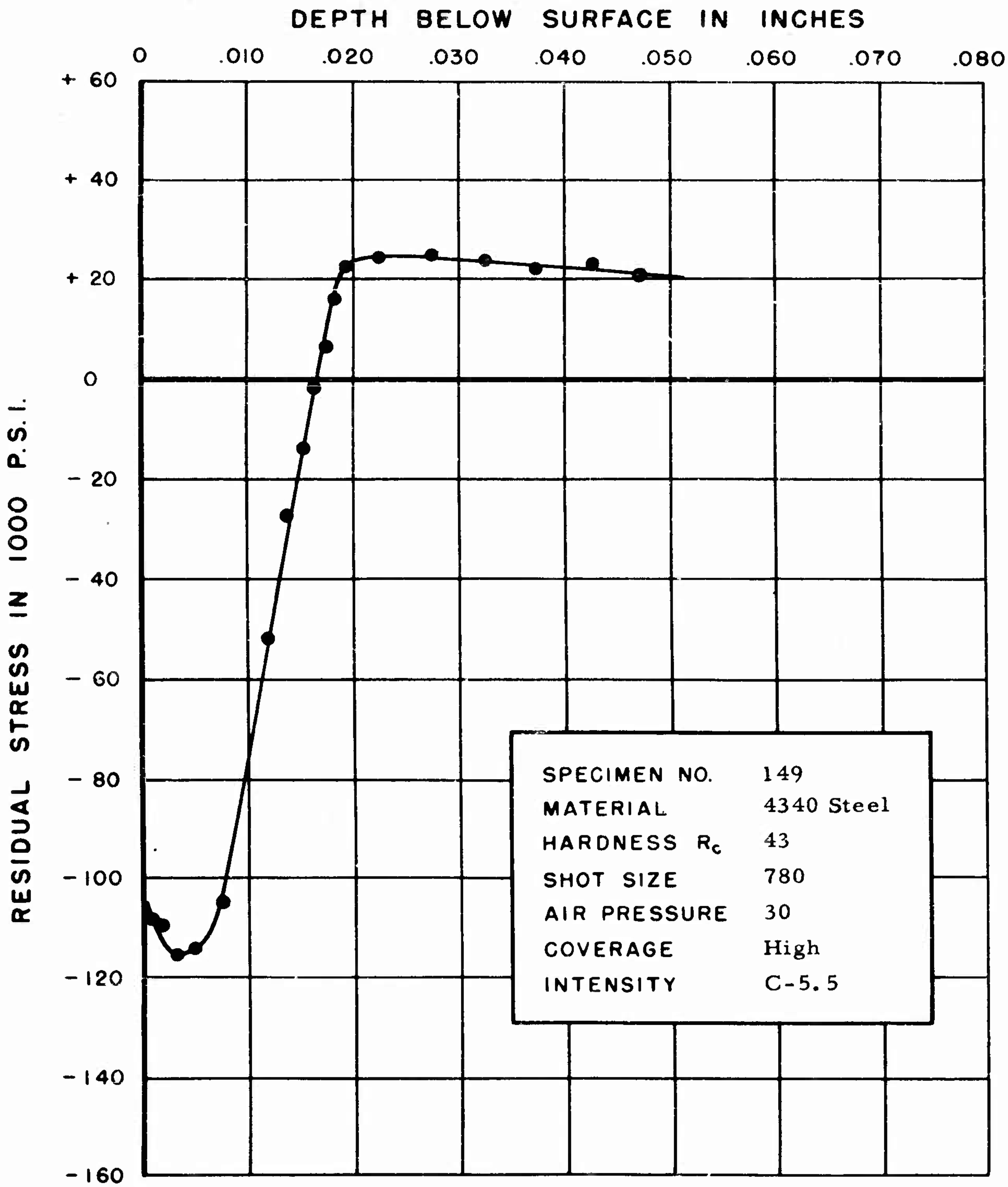


FIGURE 181. RESIDUAL STRESS DISTRIBUTION



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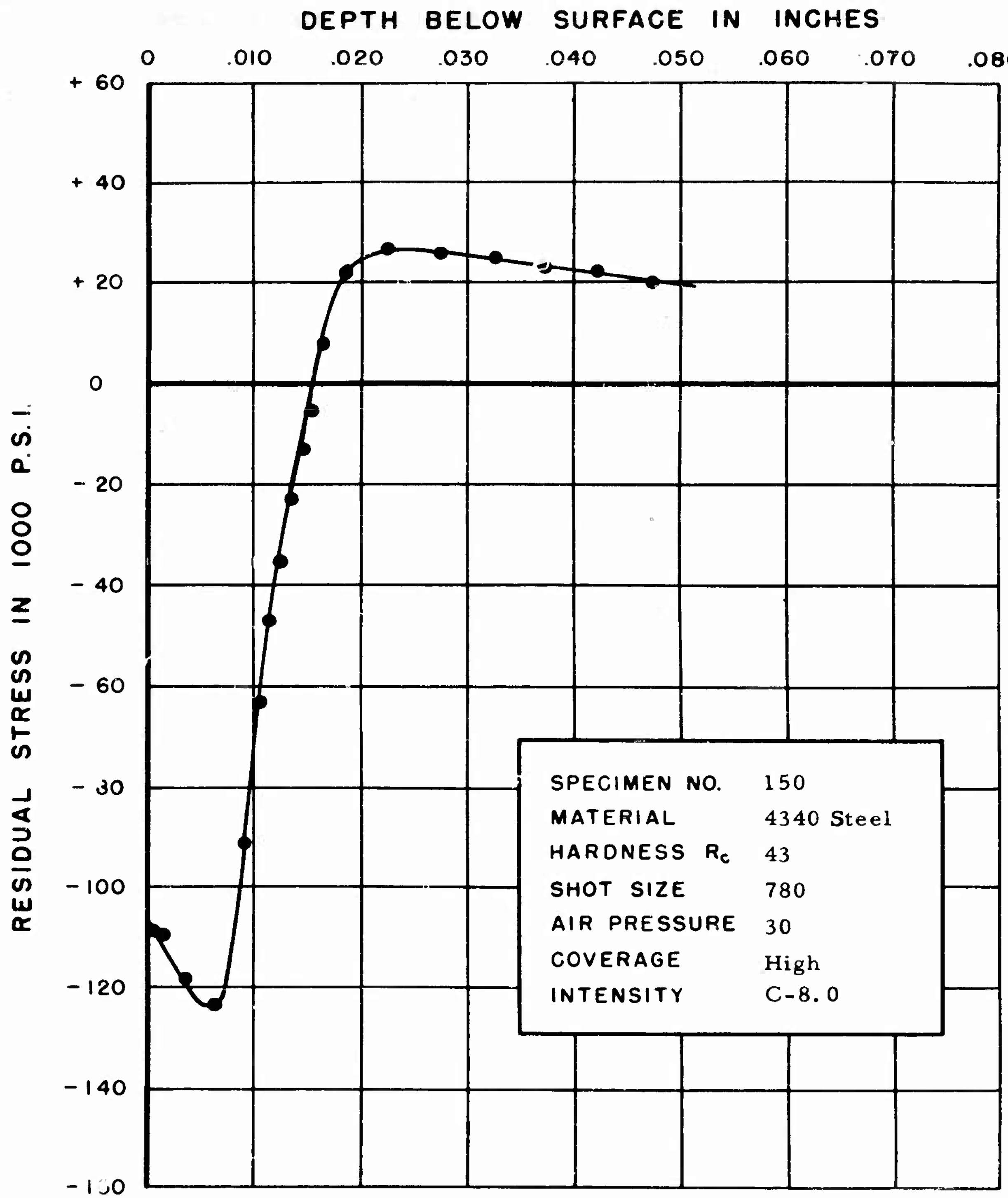

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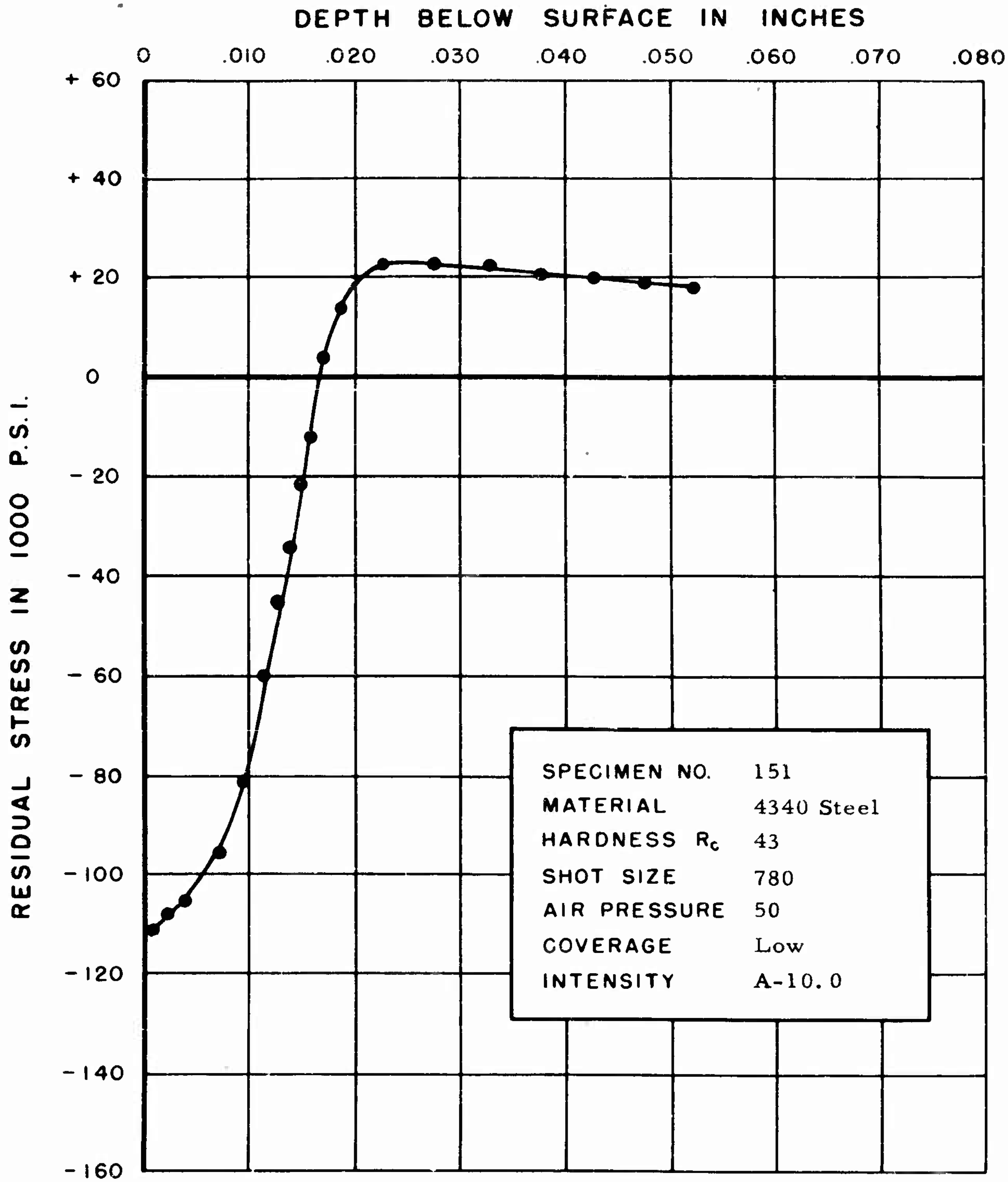

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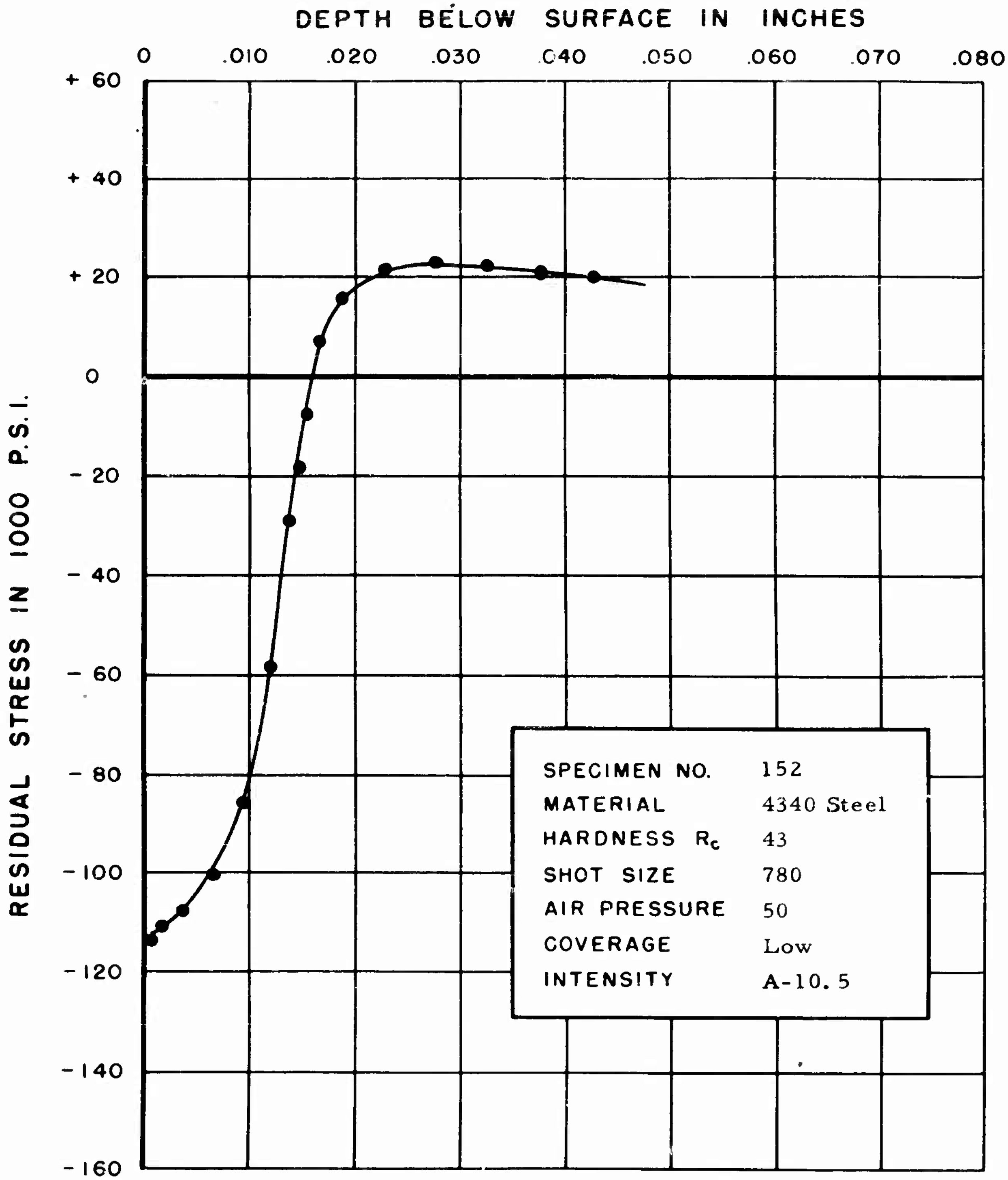

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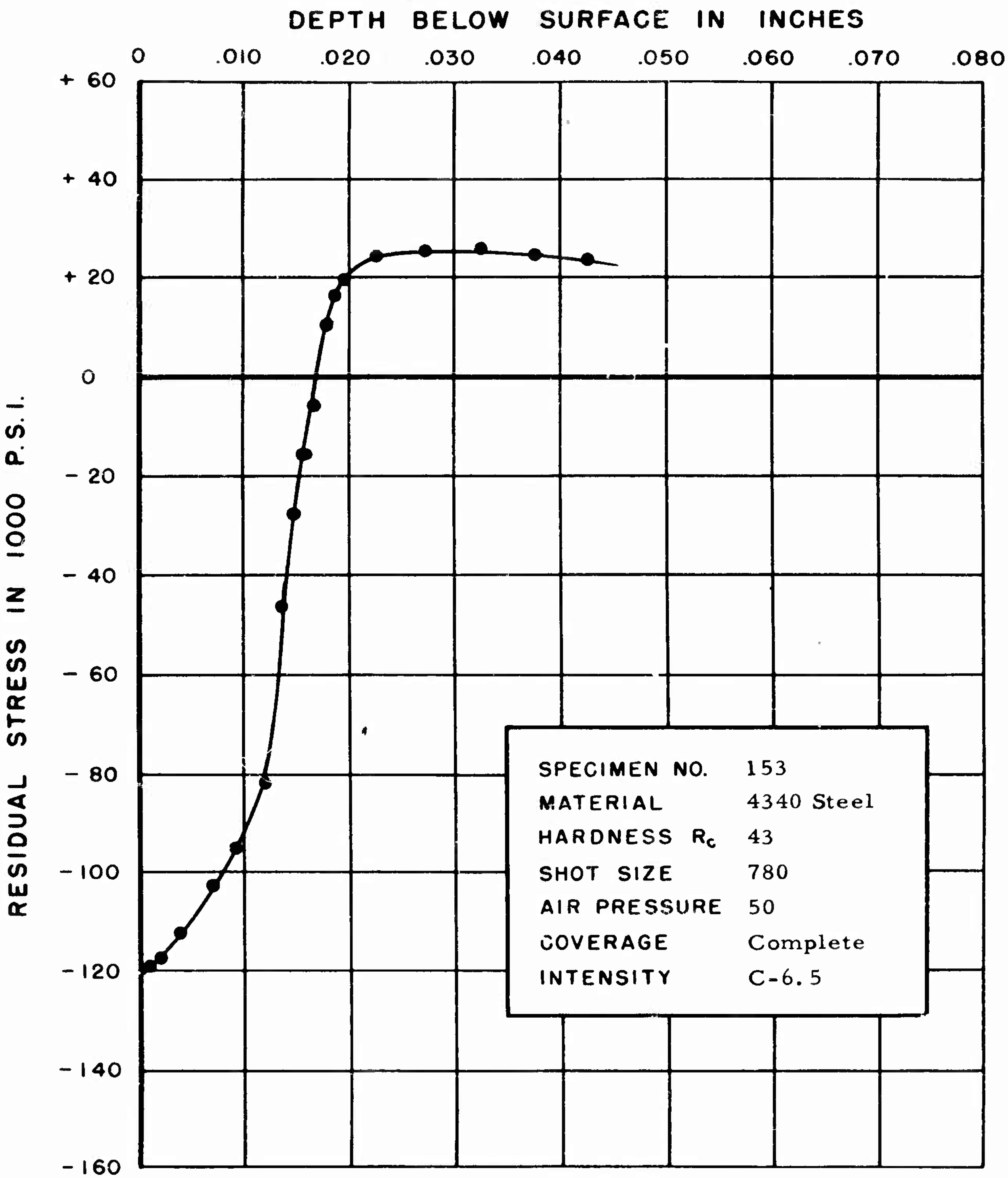

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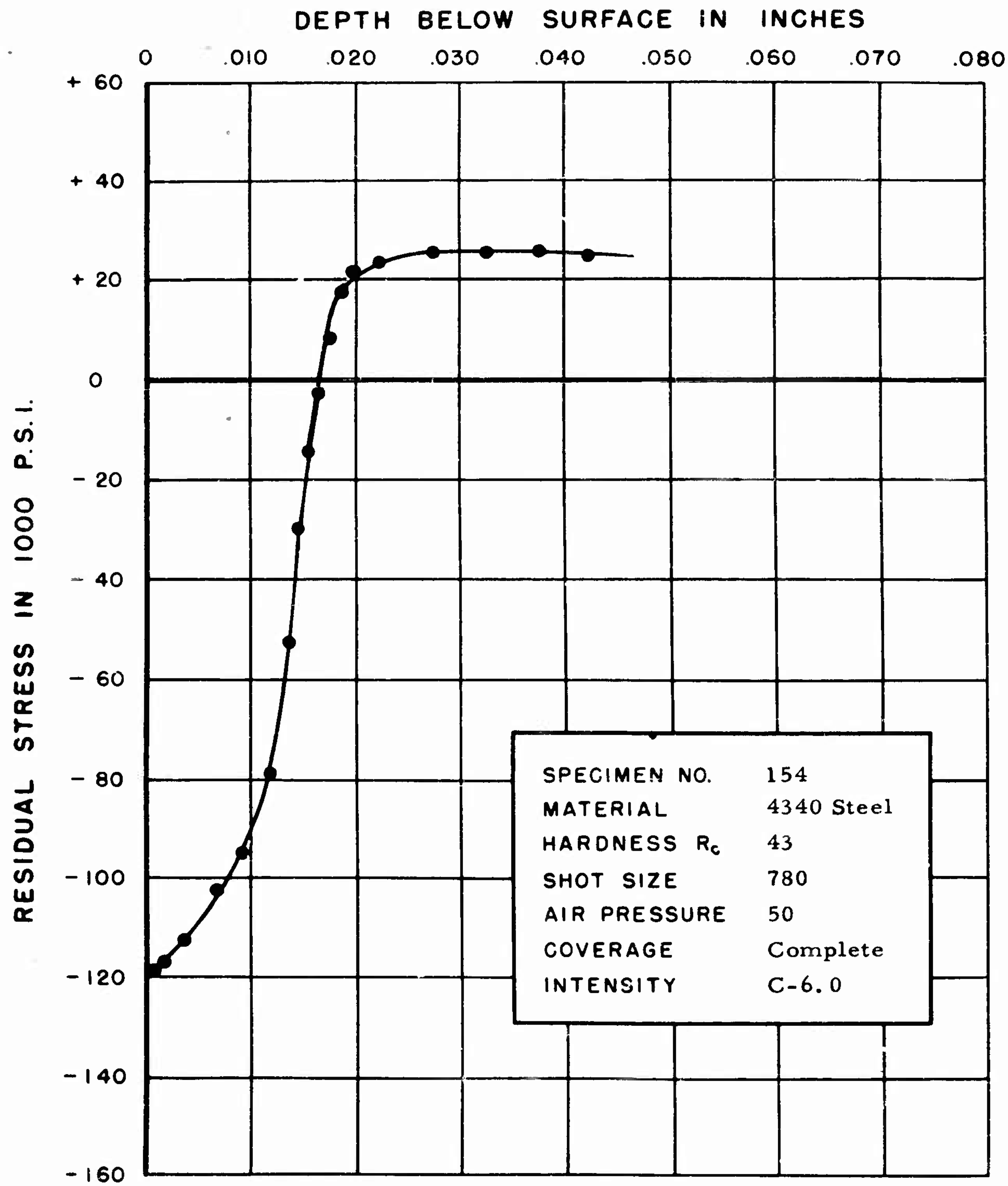

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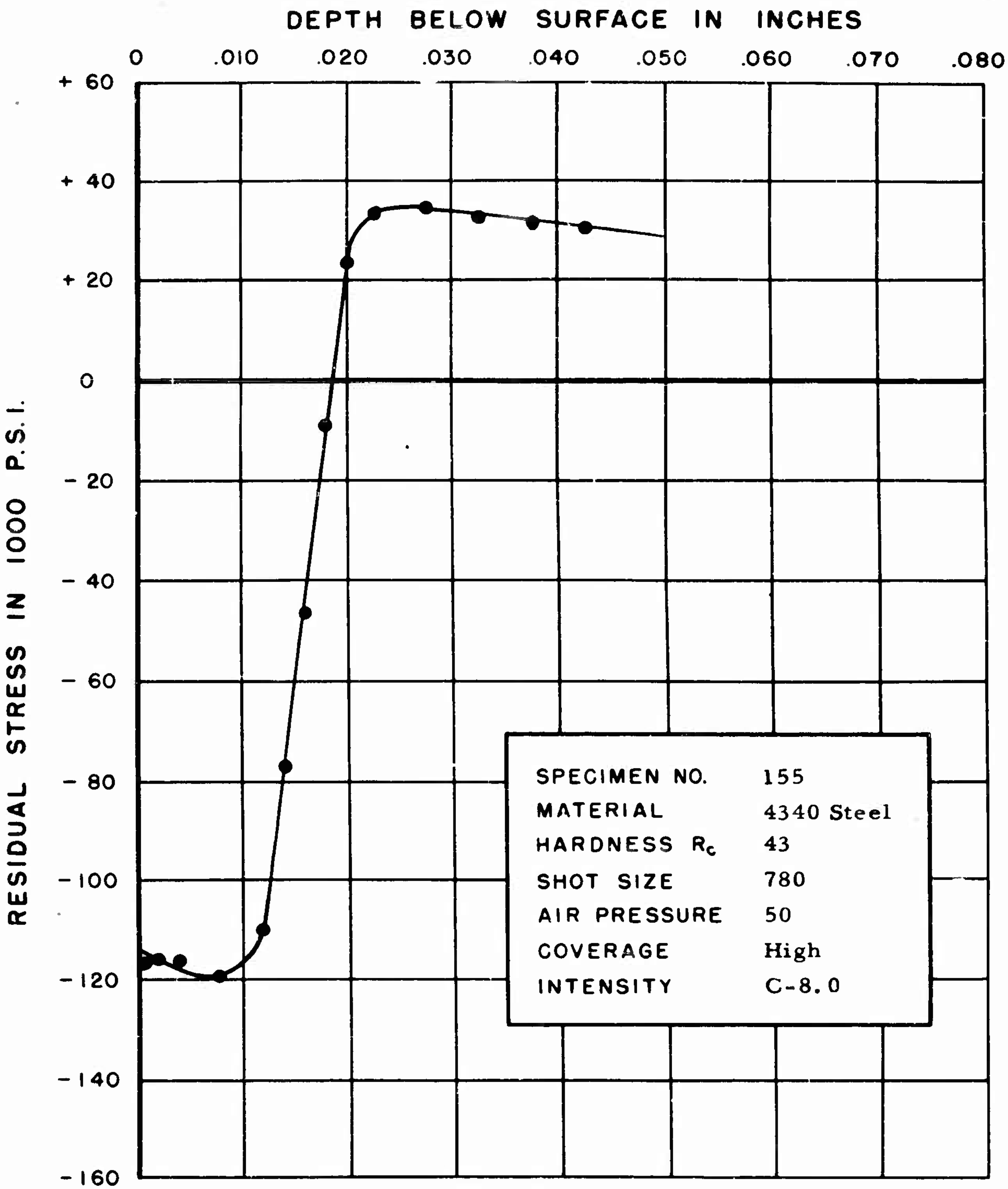

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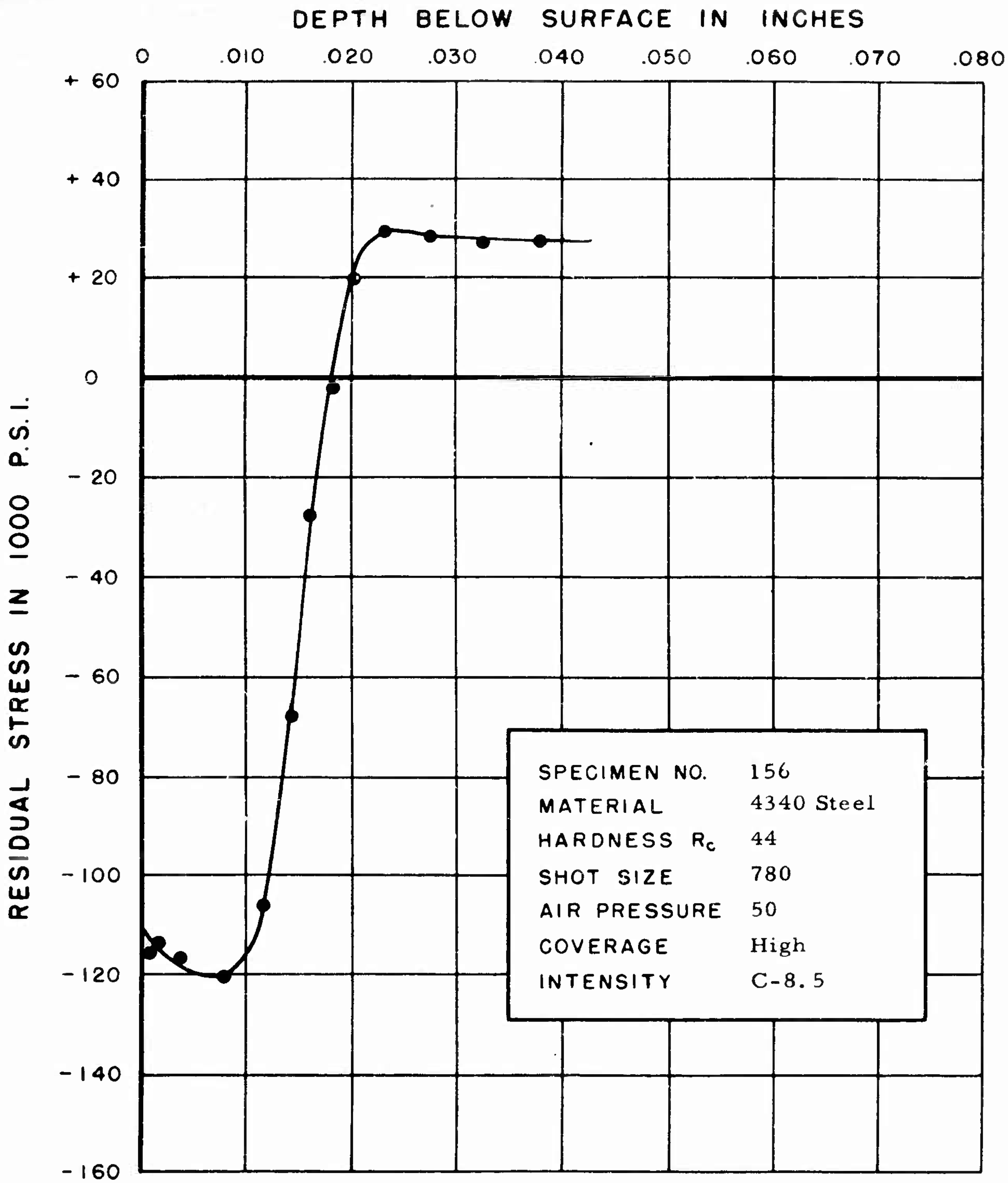

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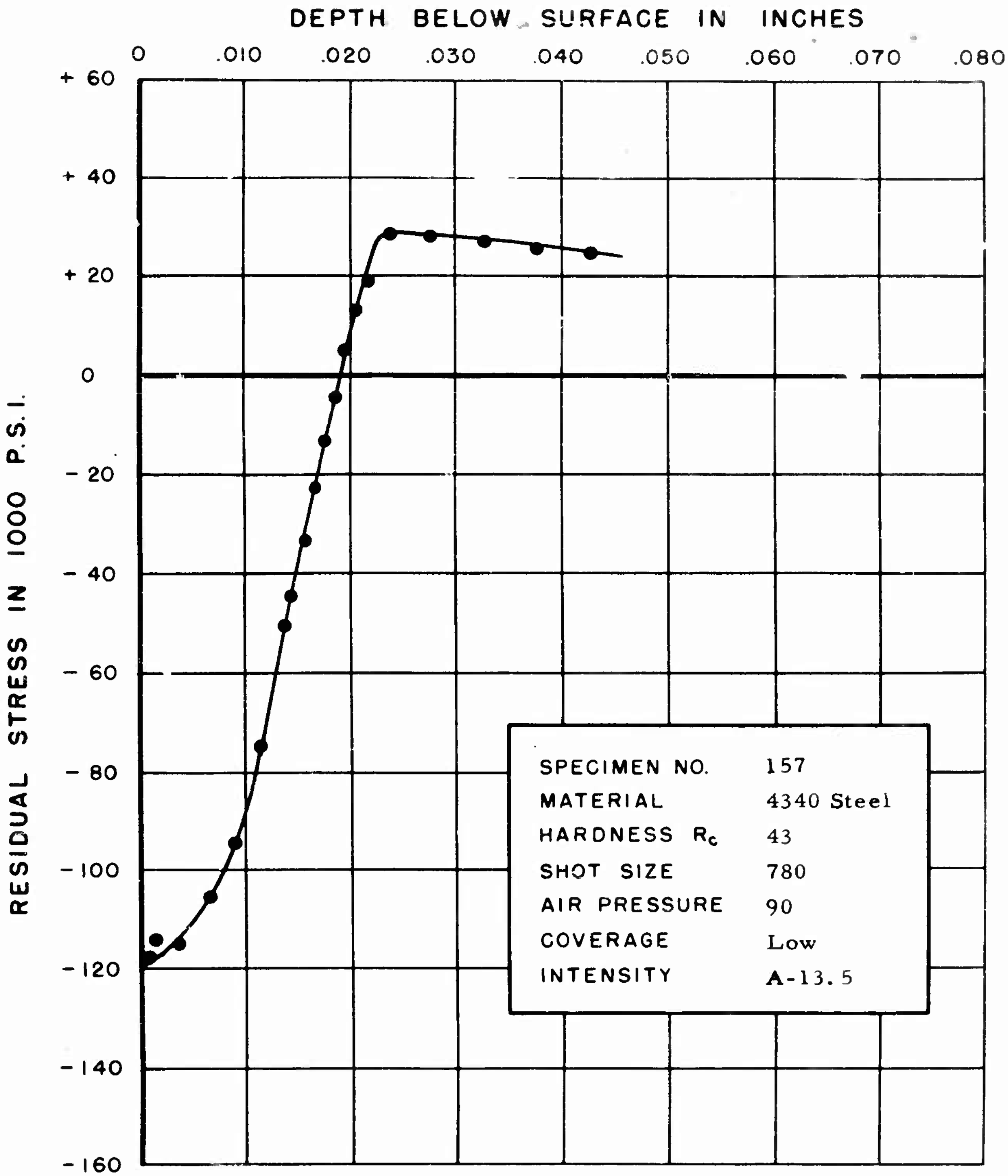

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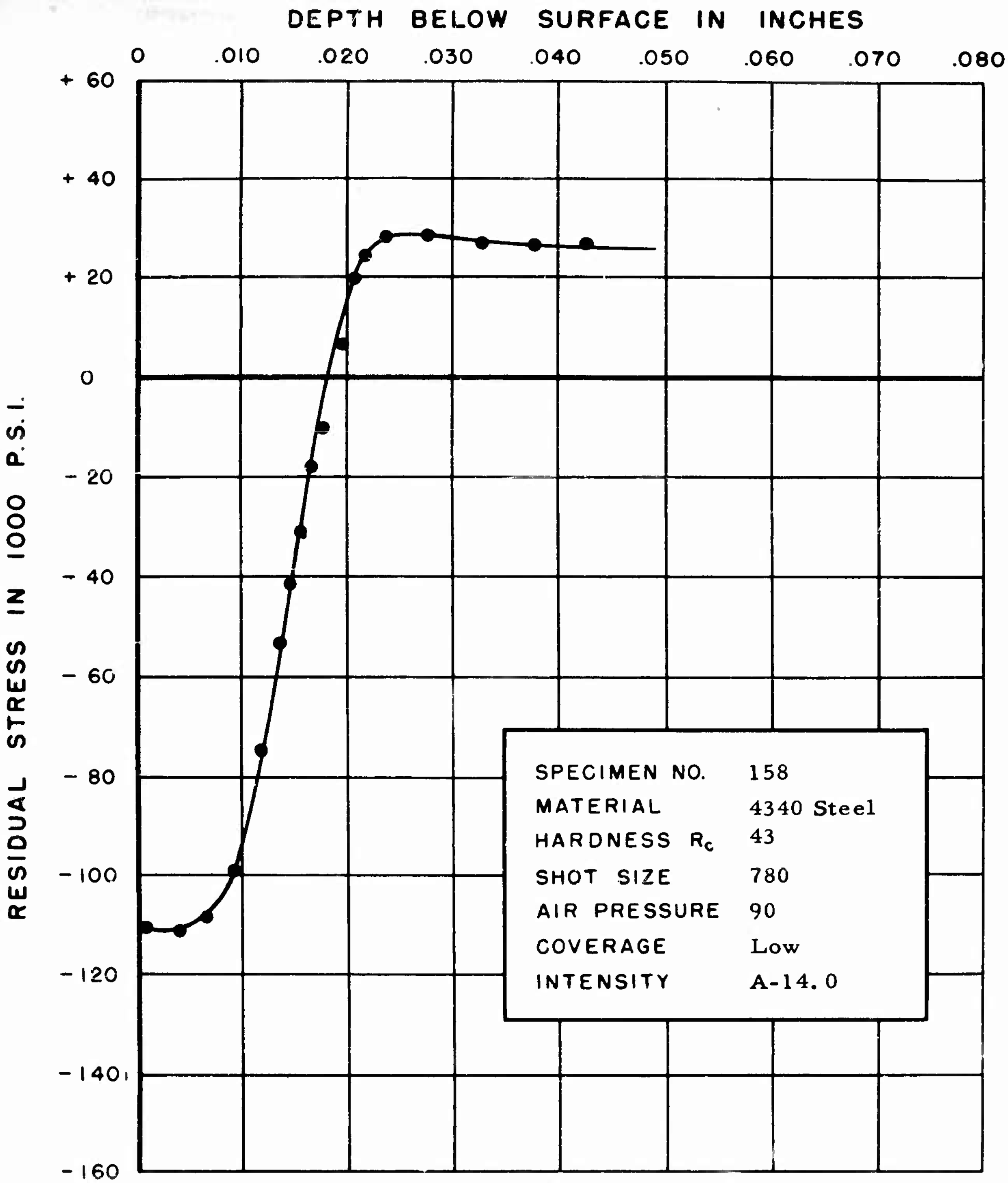

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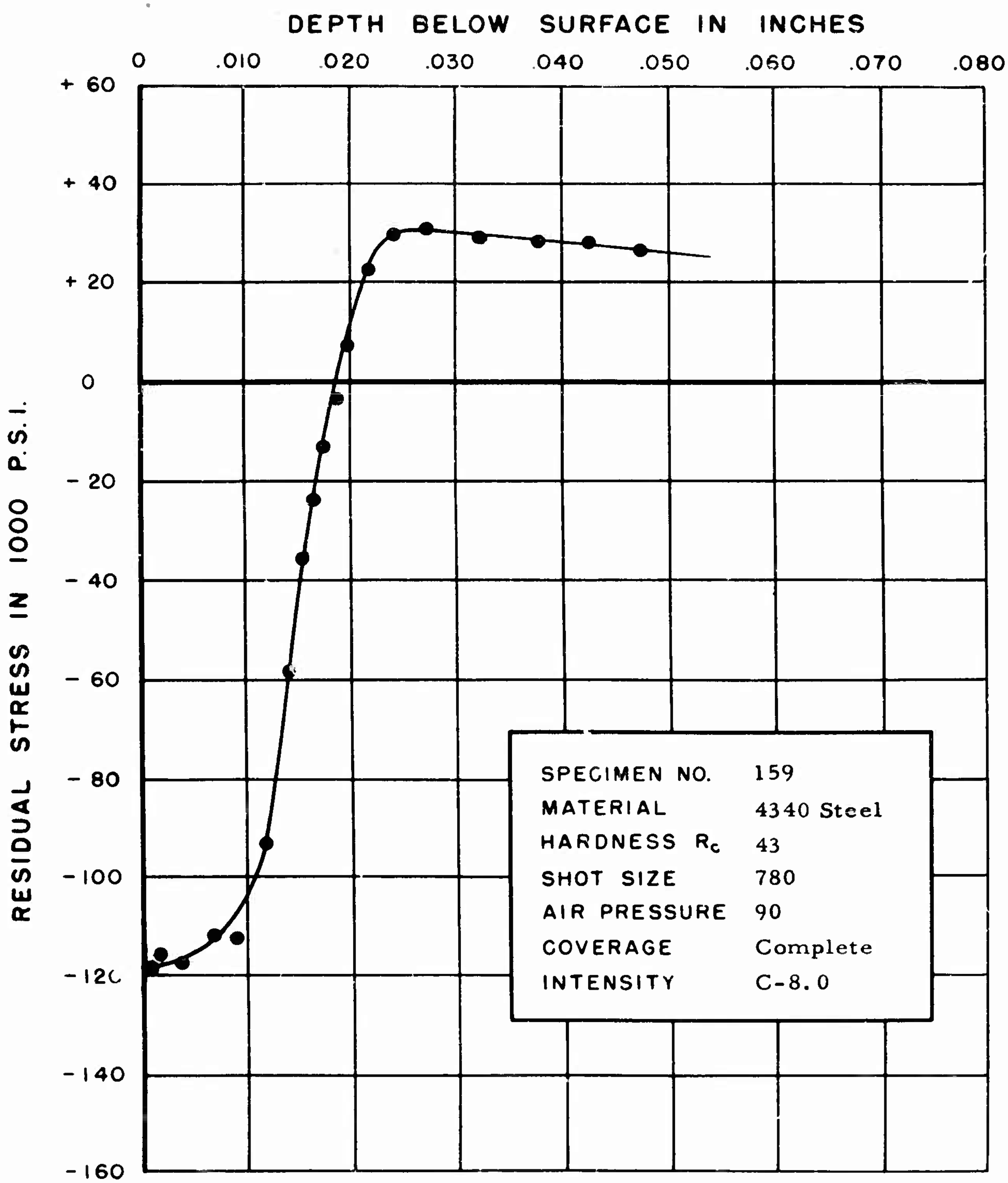

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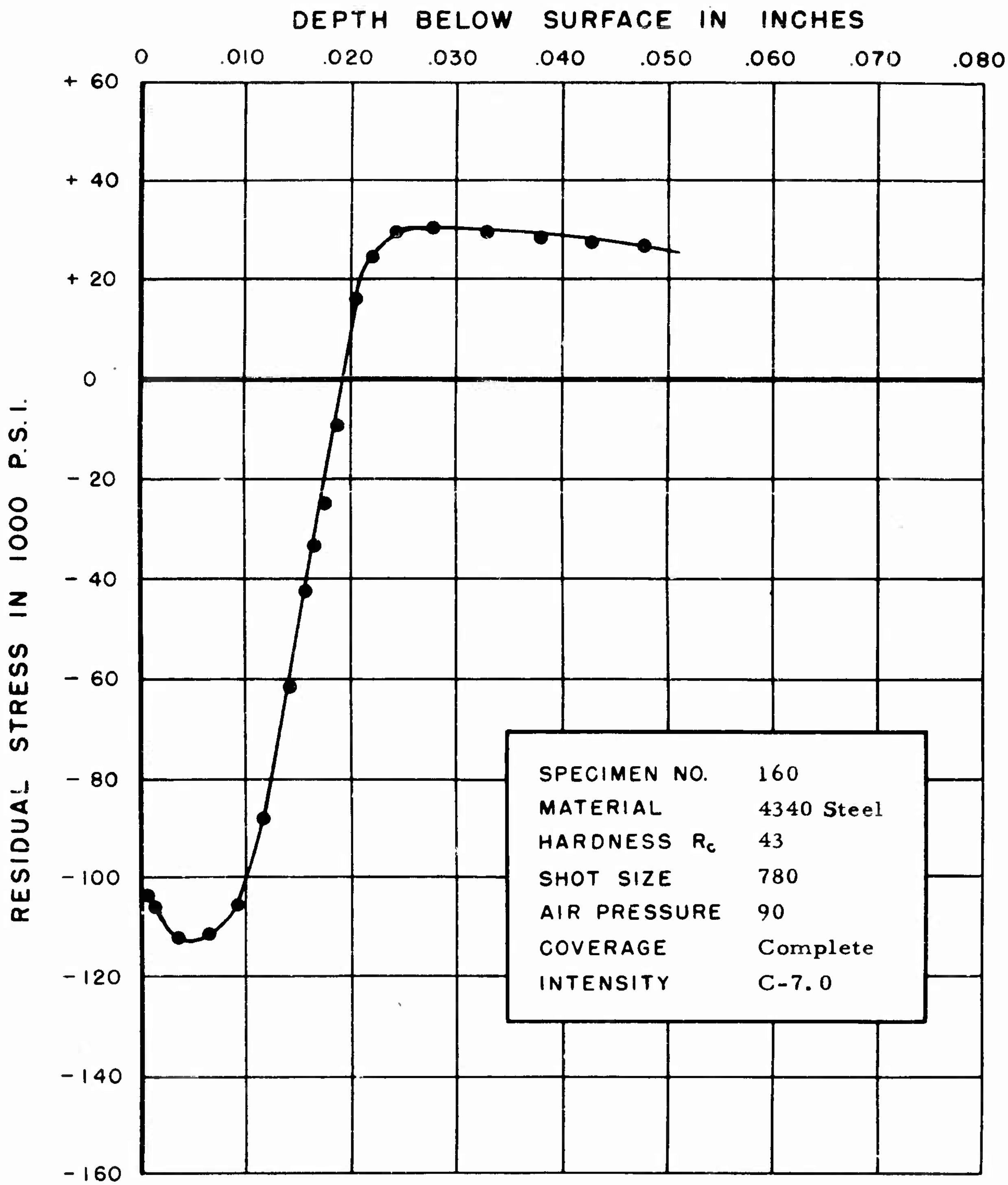

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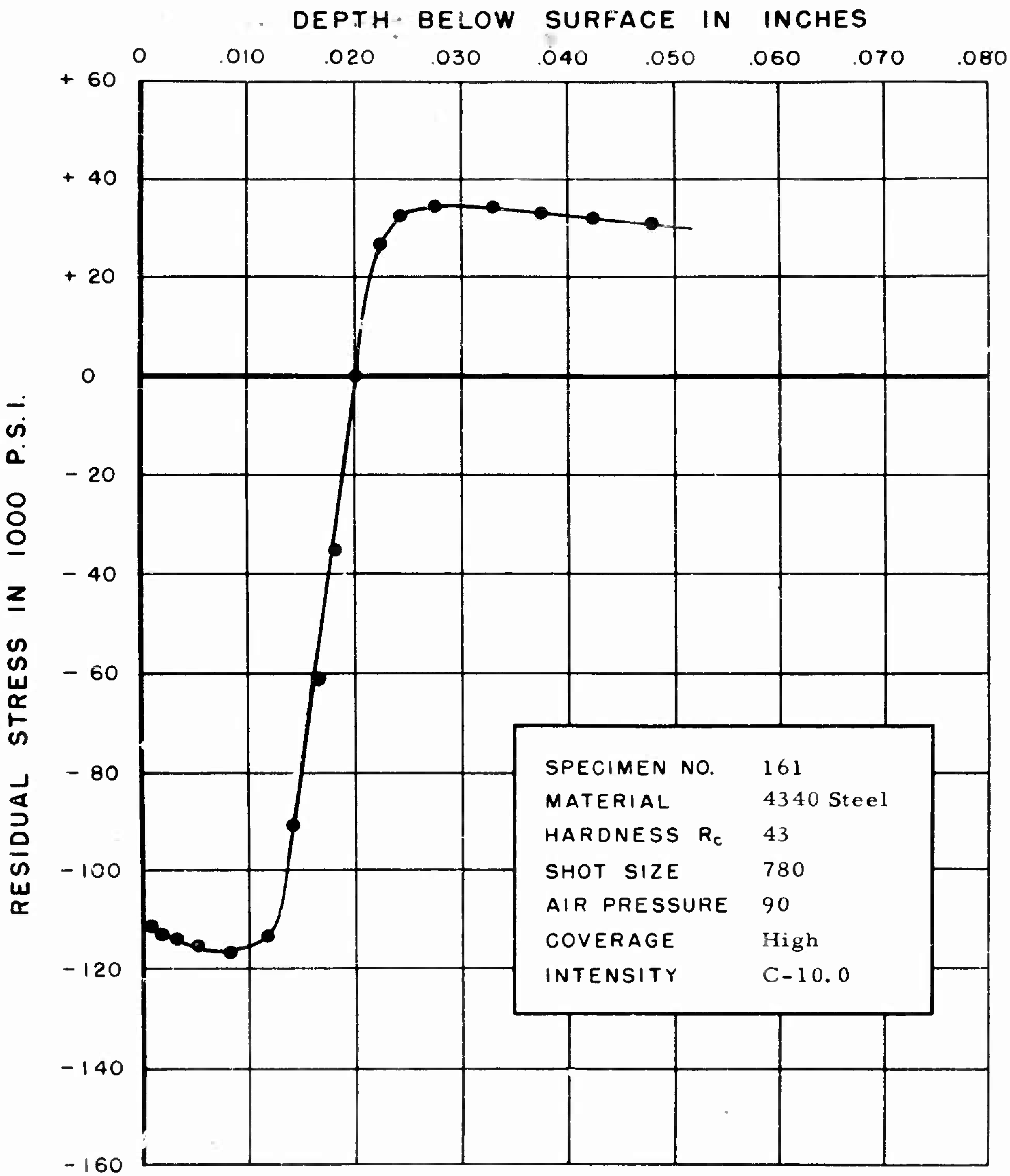

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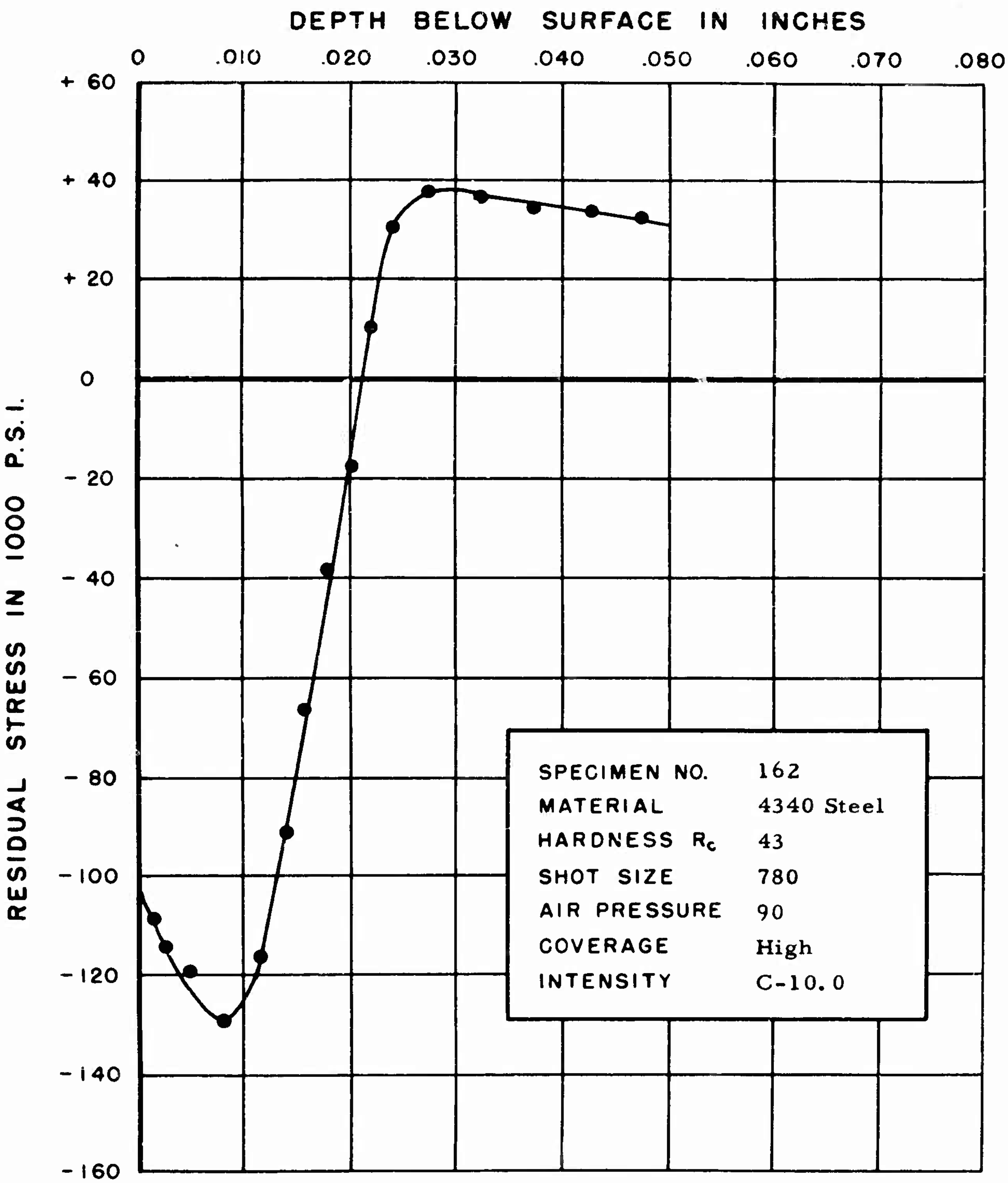

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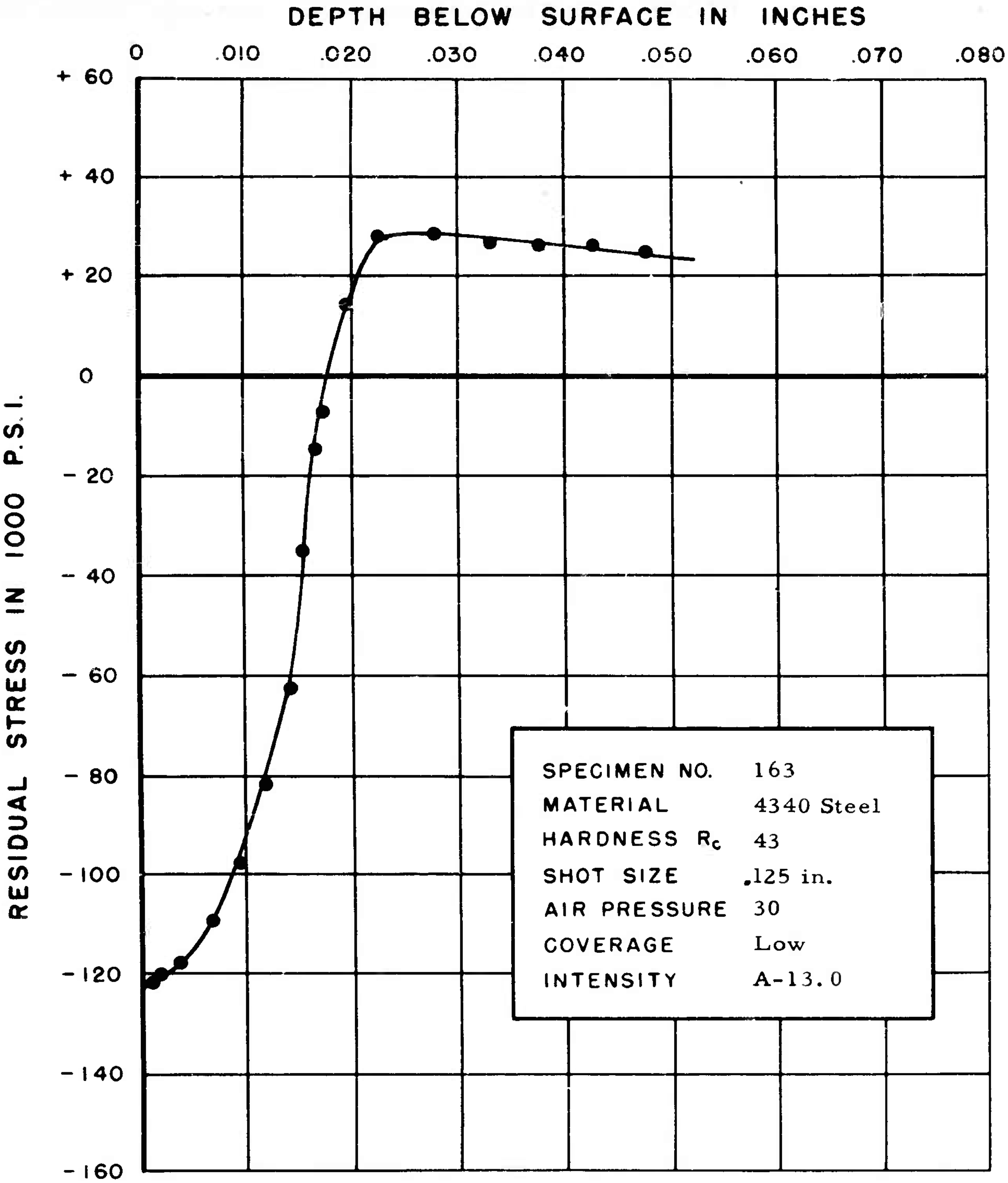

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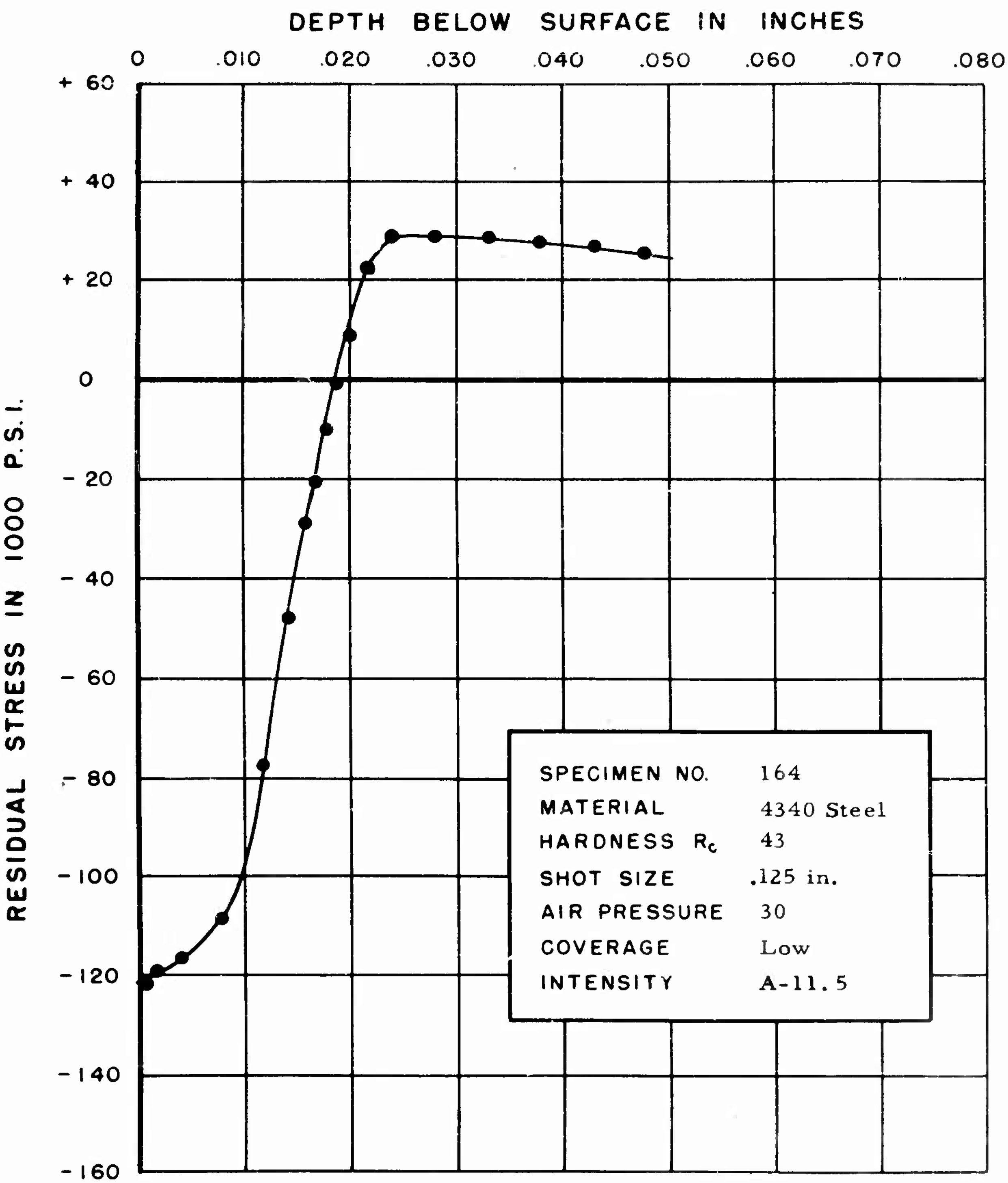

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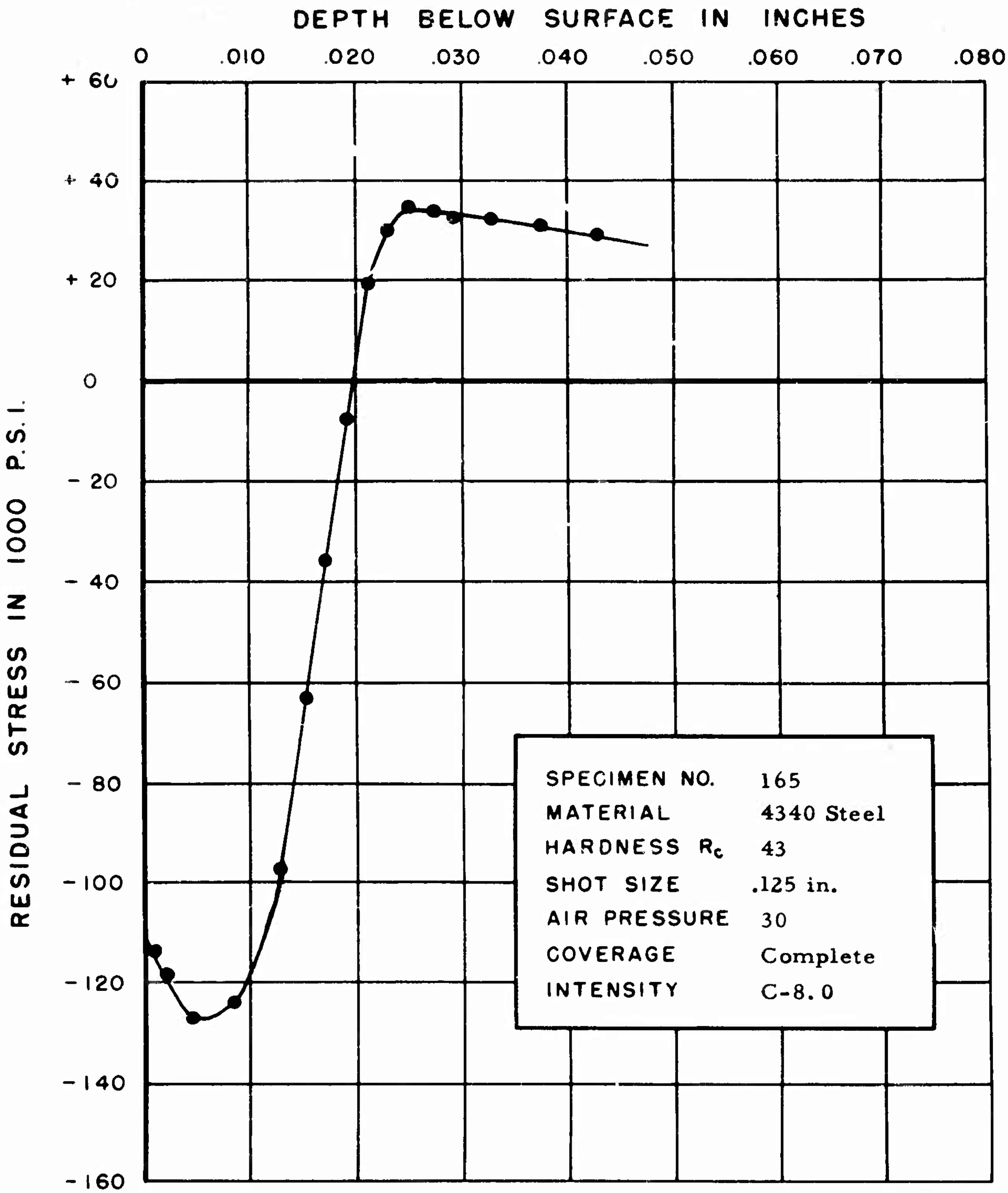

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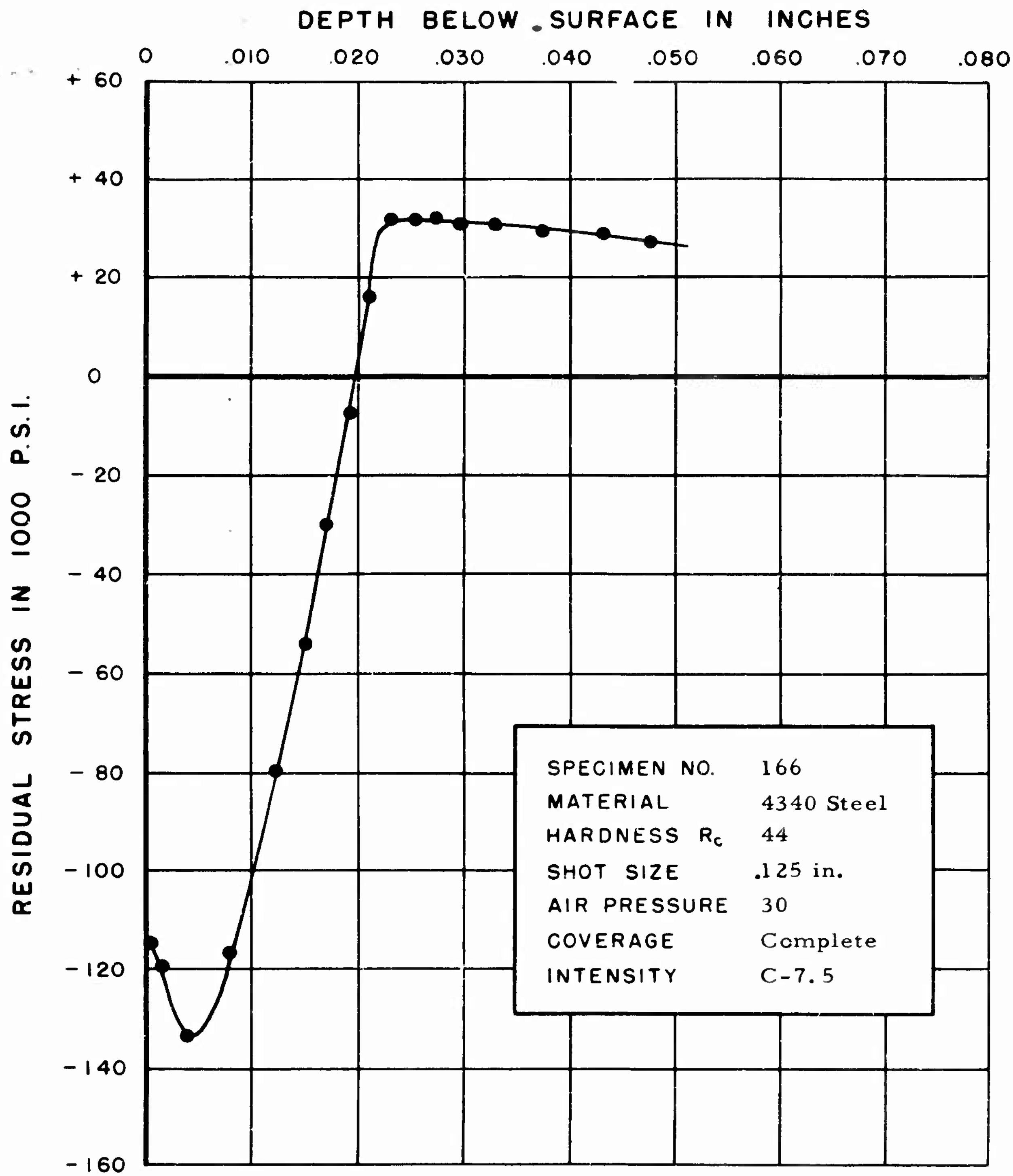

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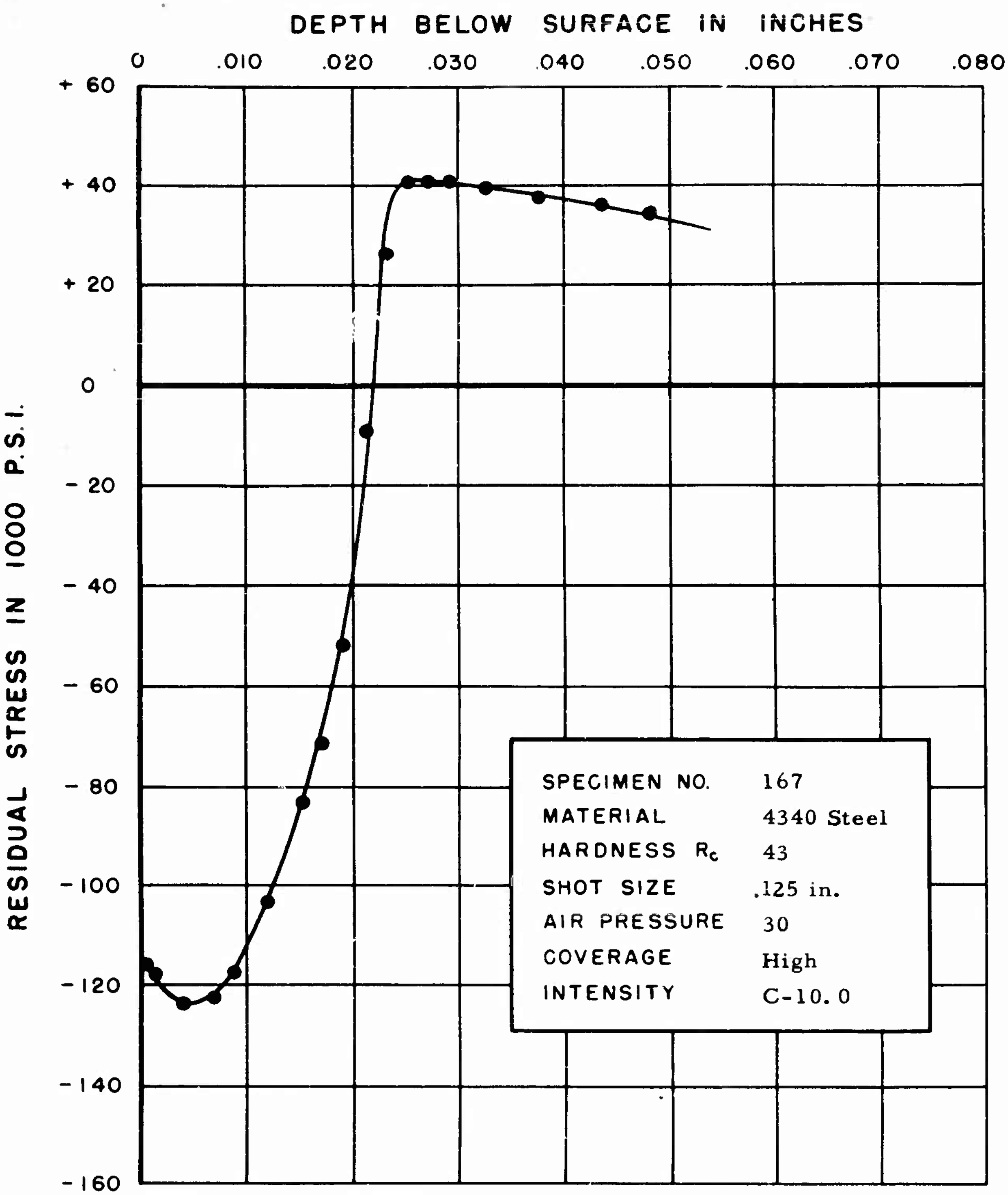

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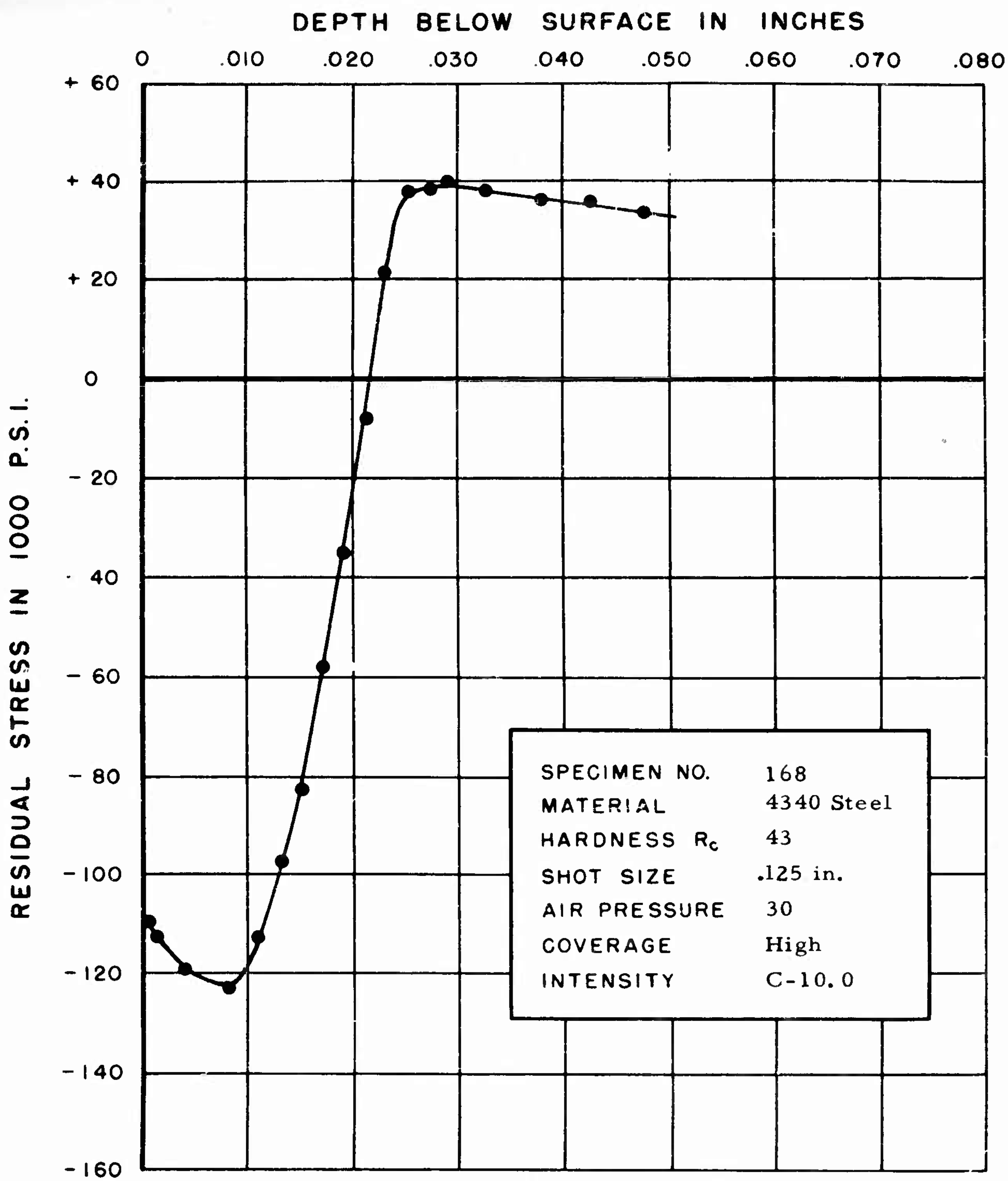

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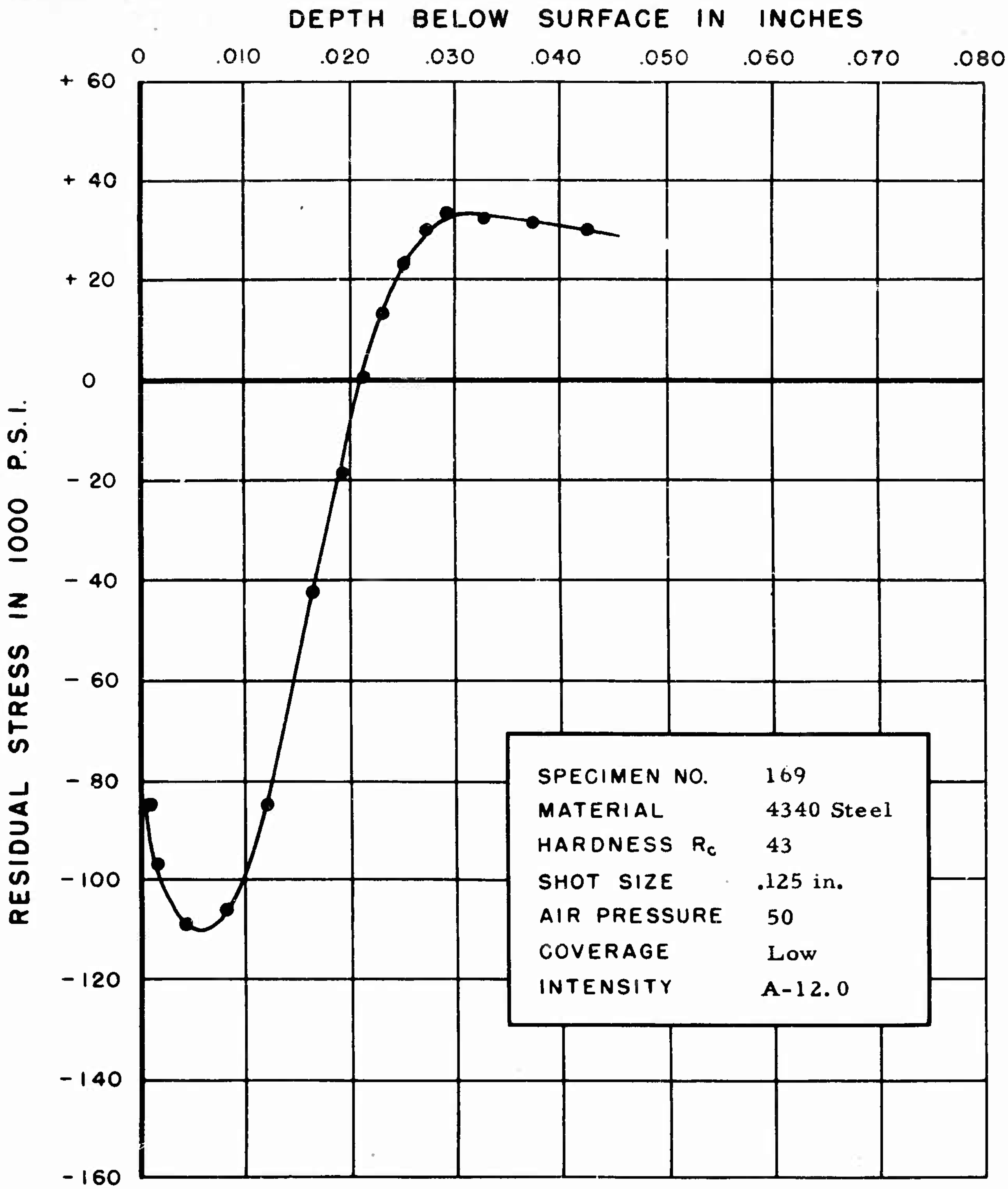

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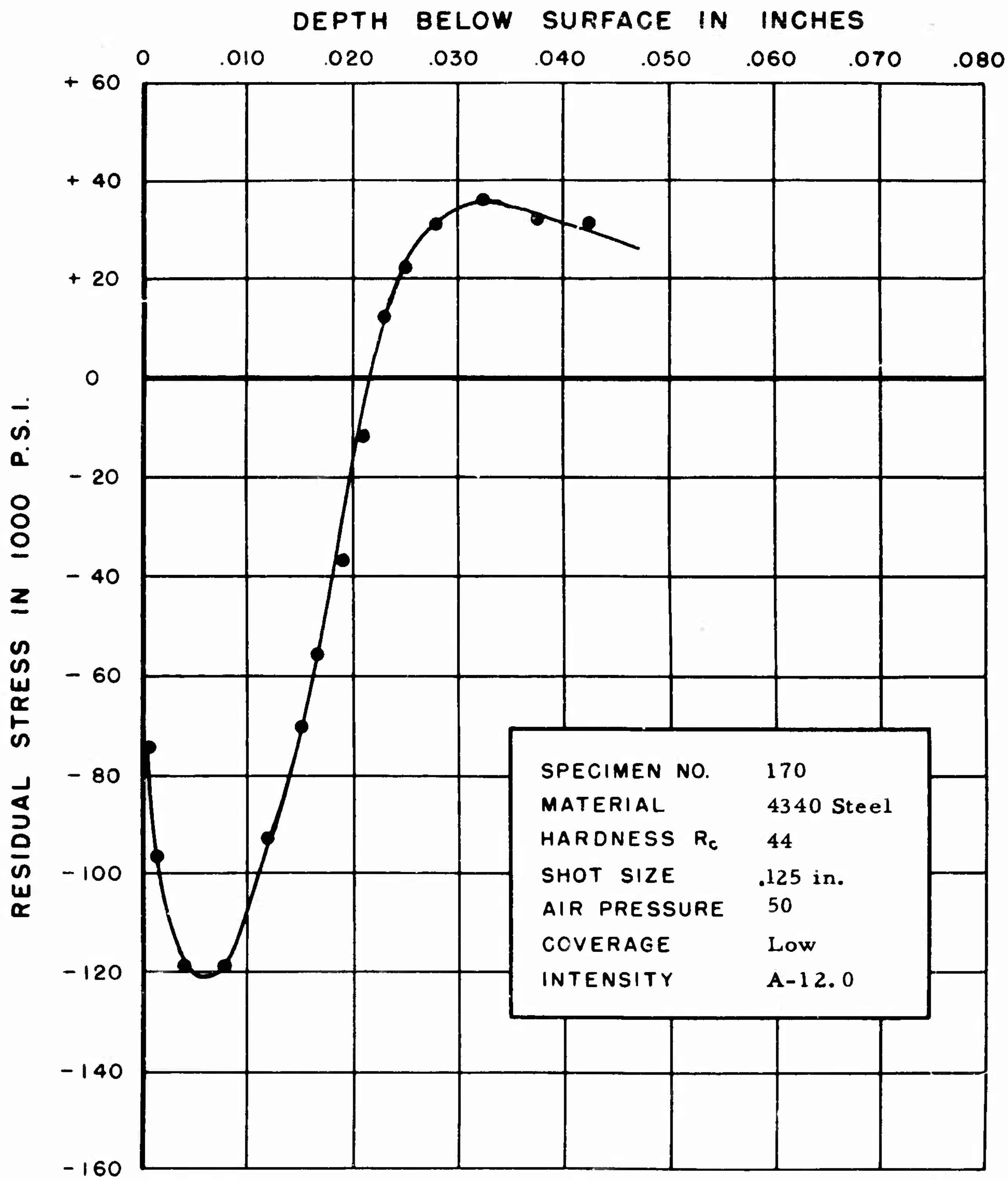

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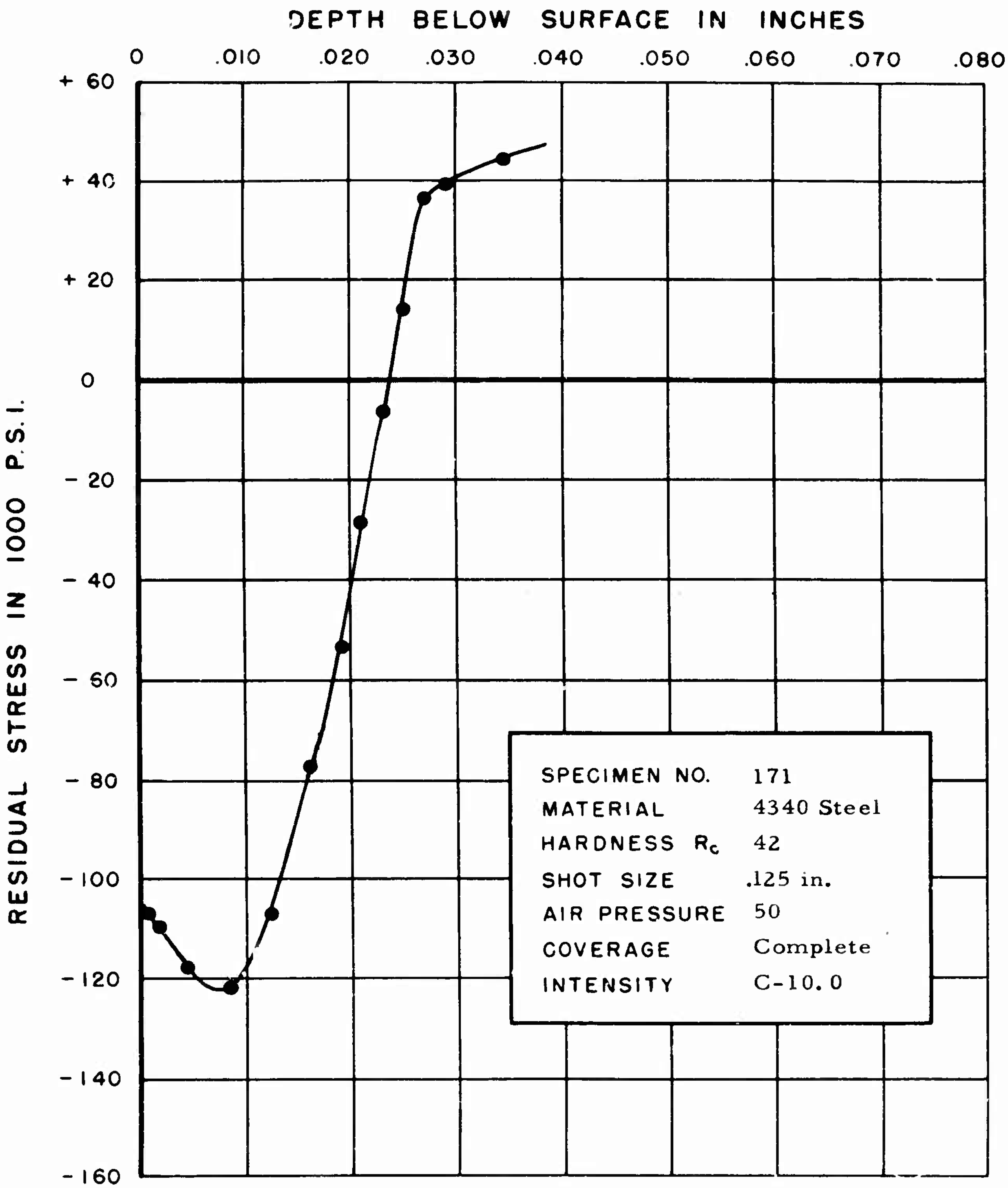

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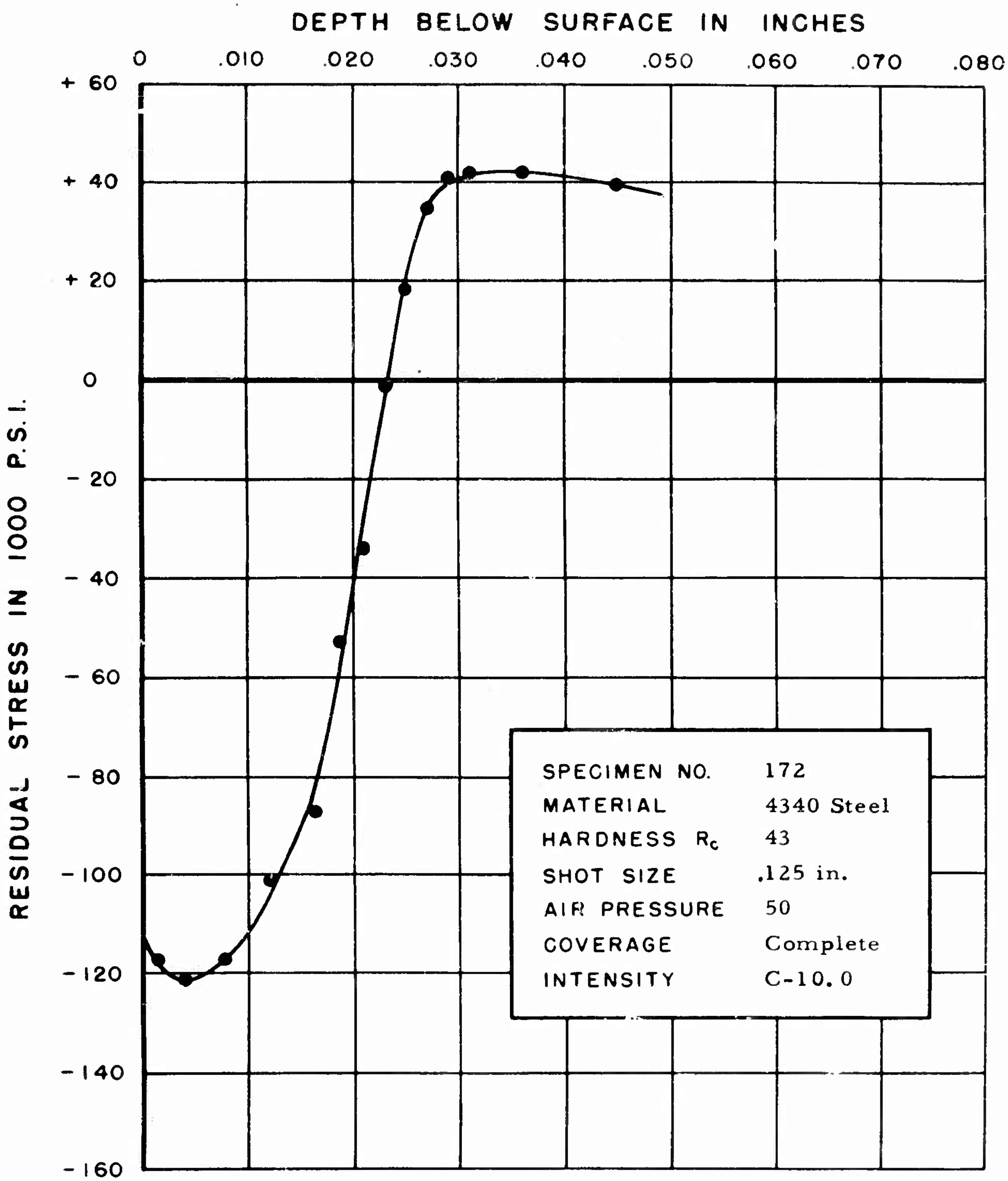

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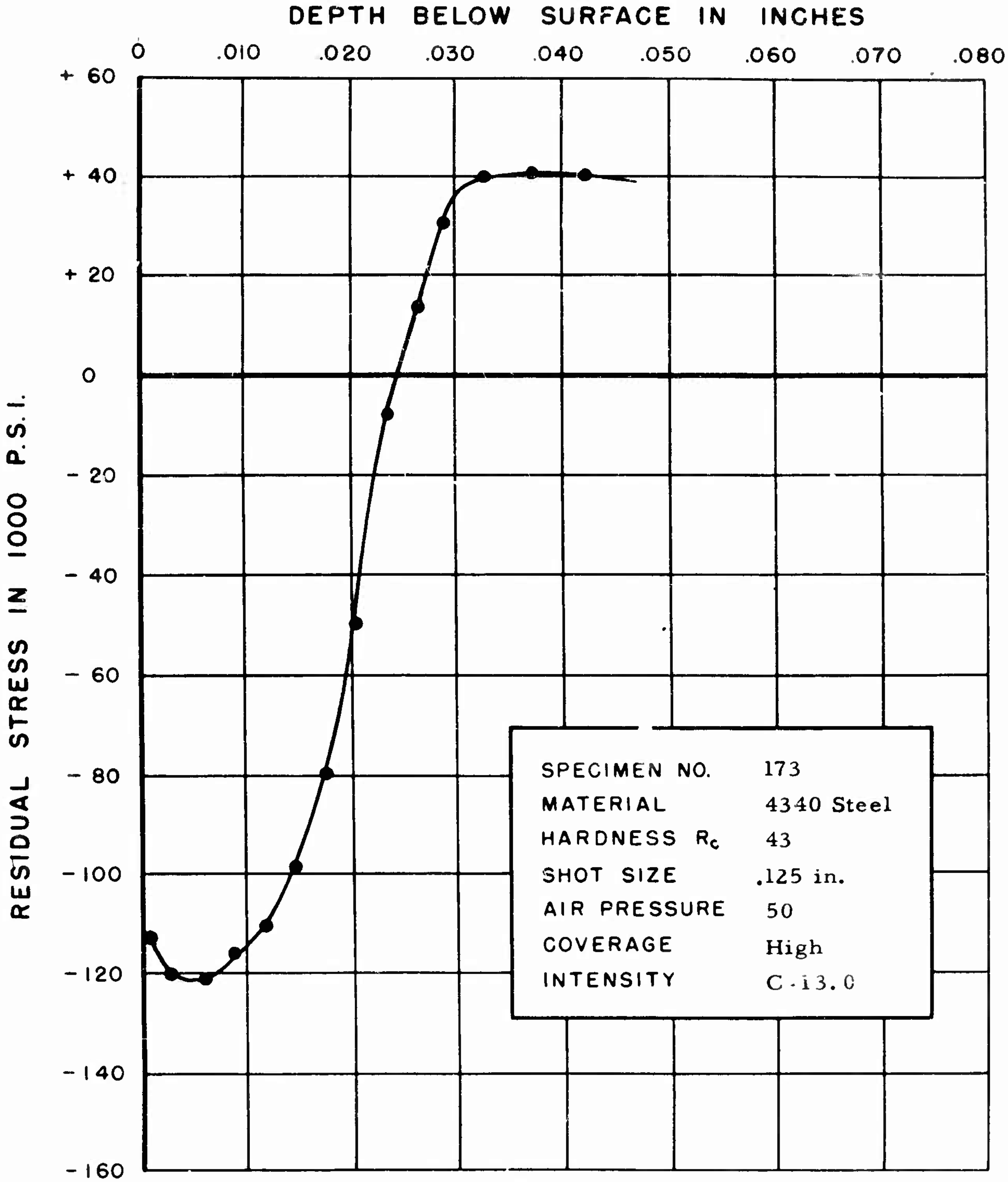

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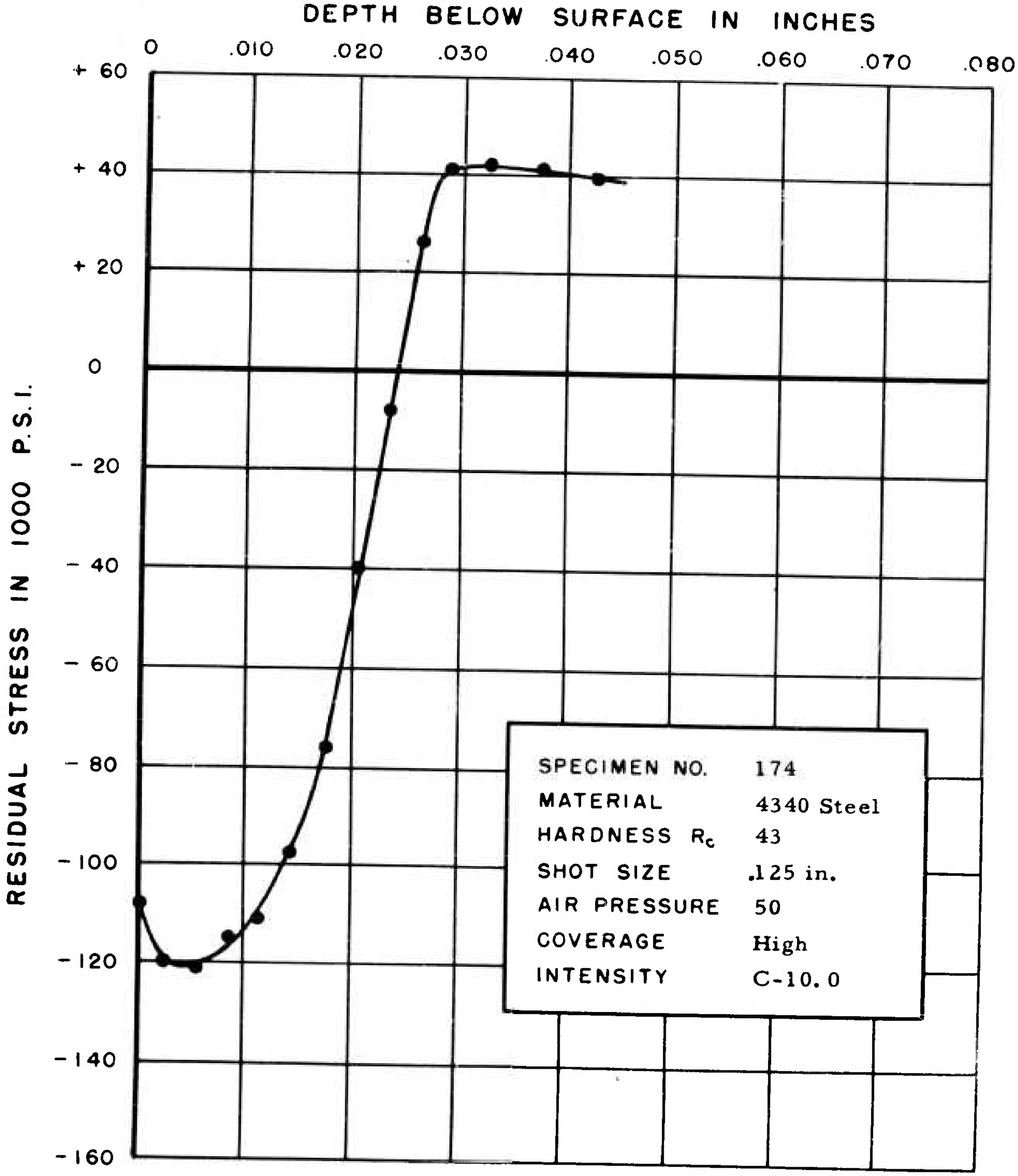

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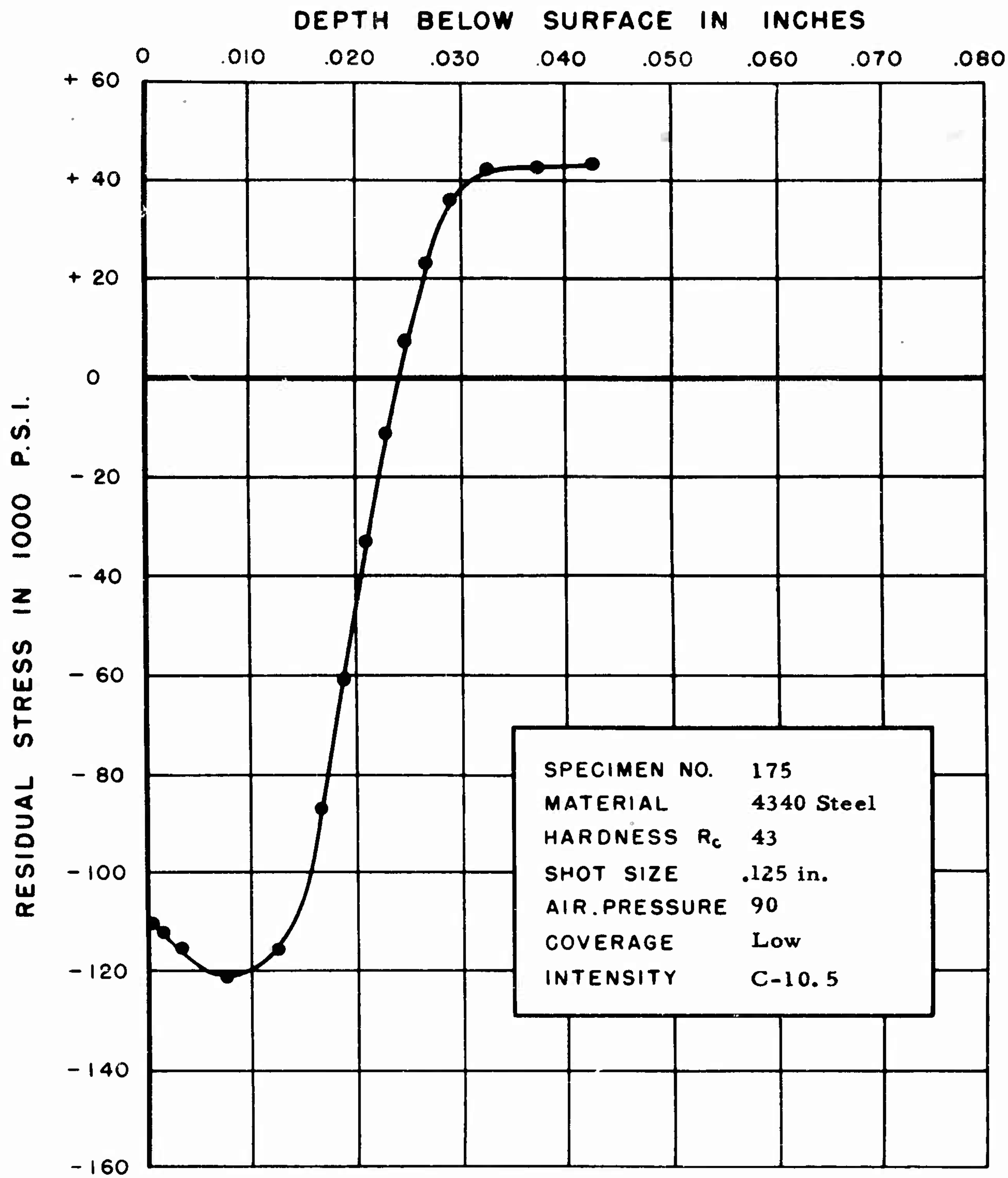

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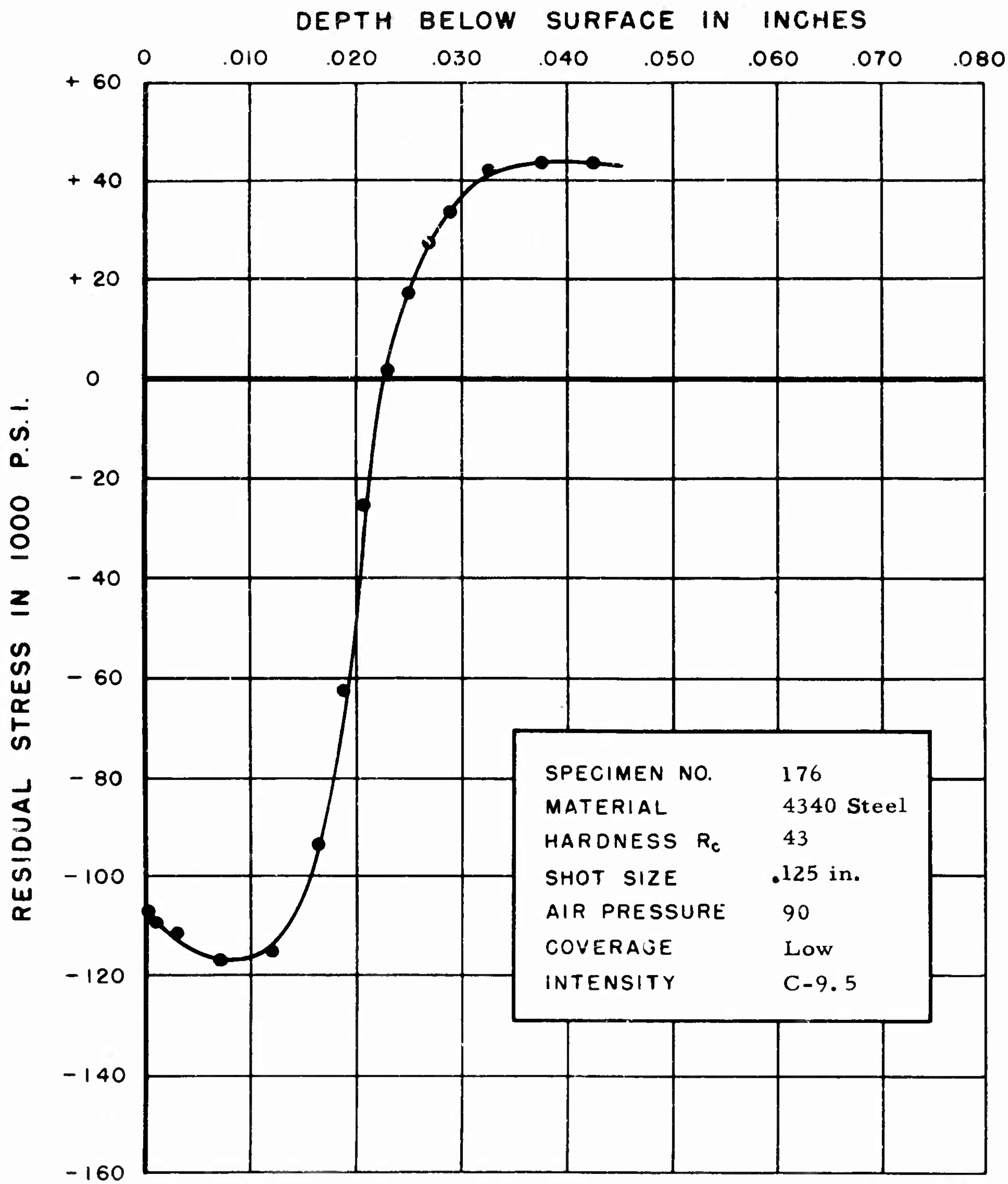

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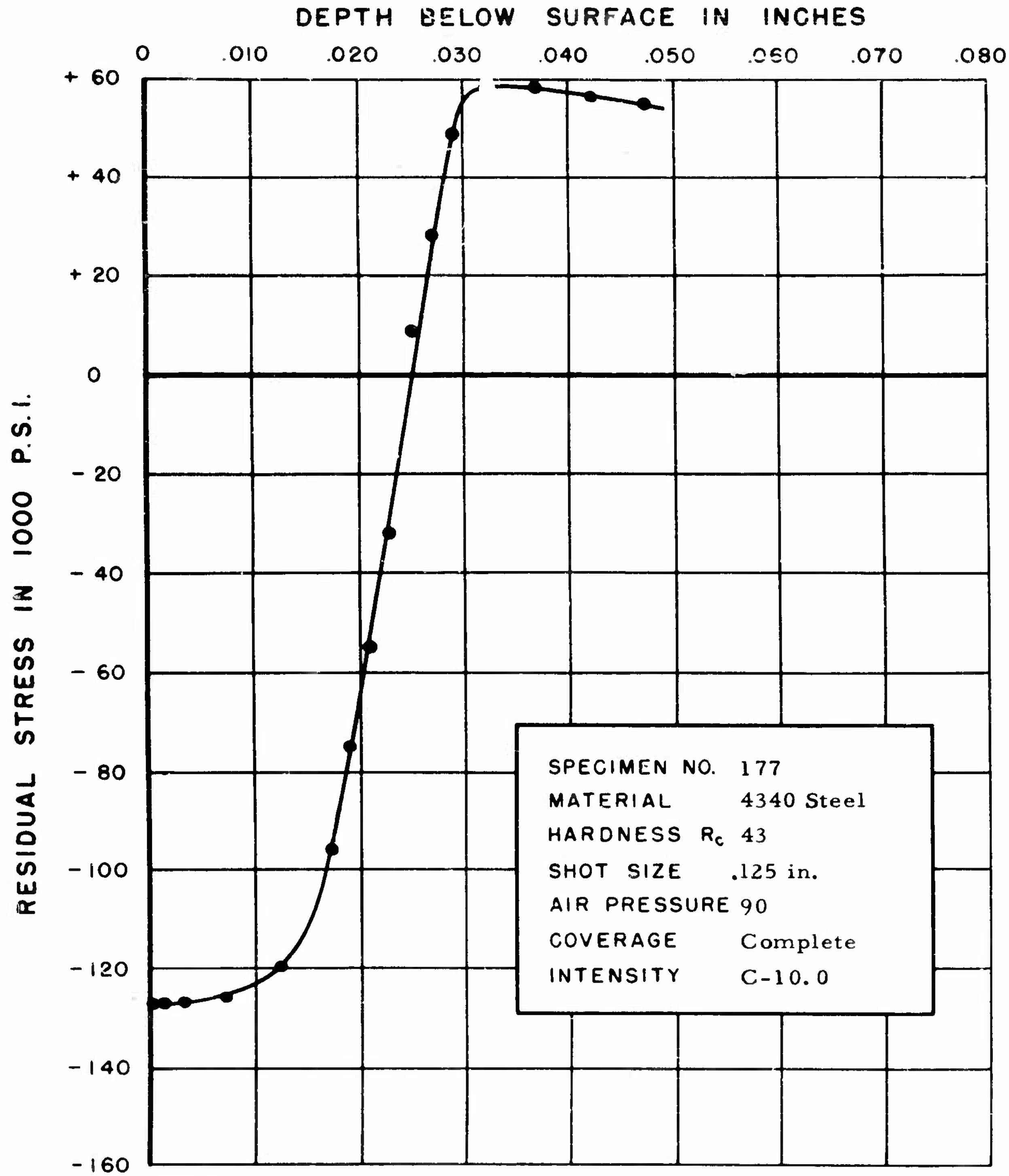

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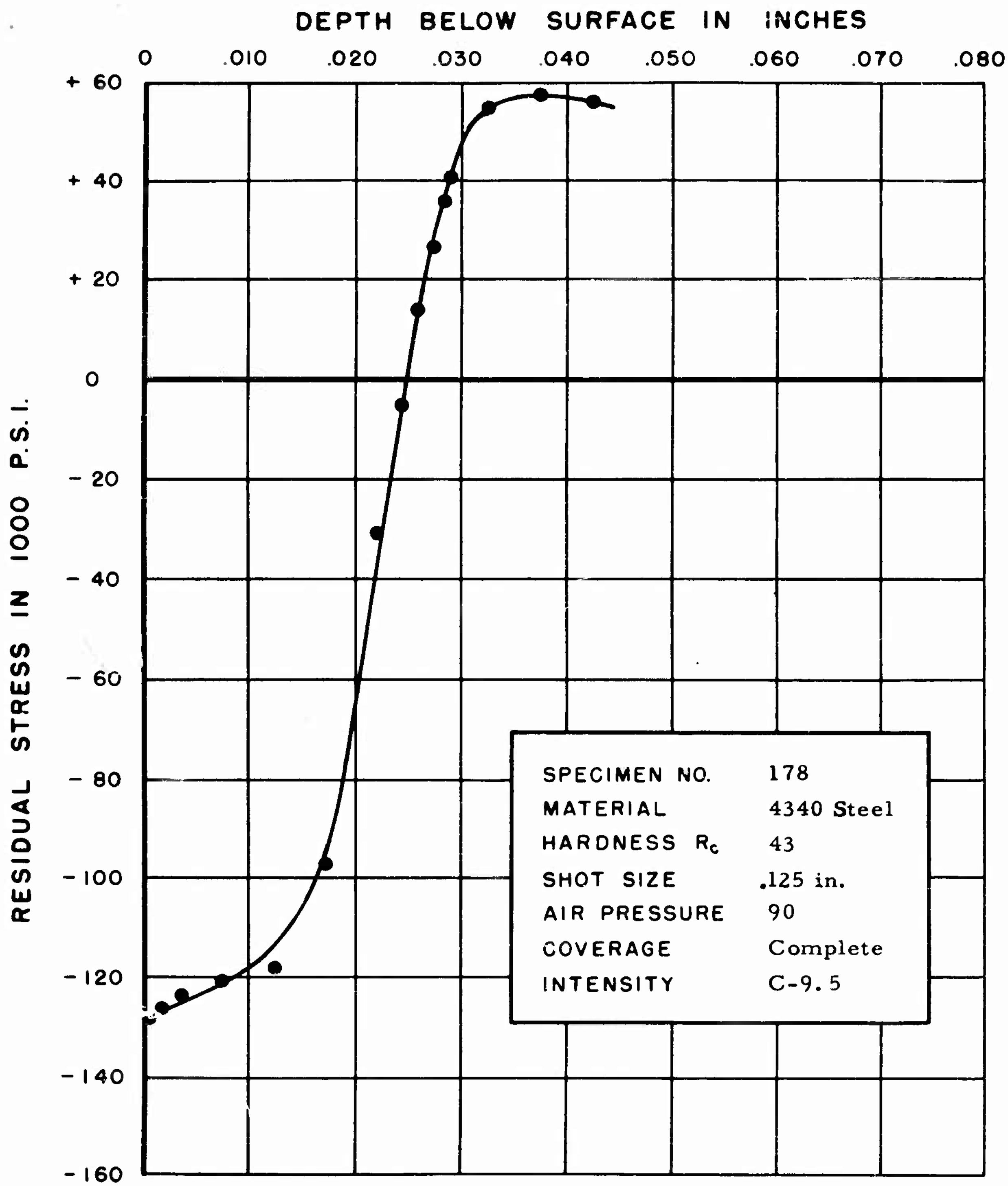

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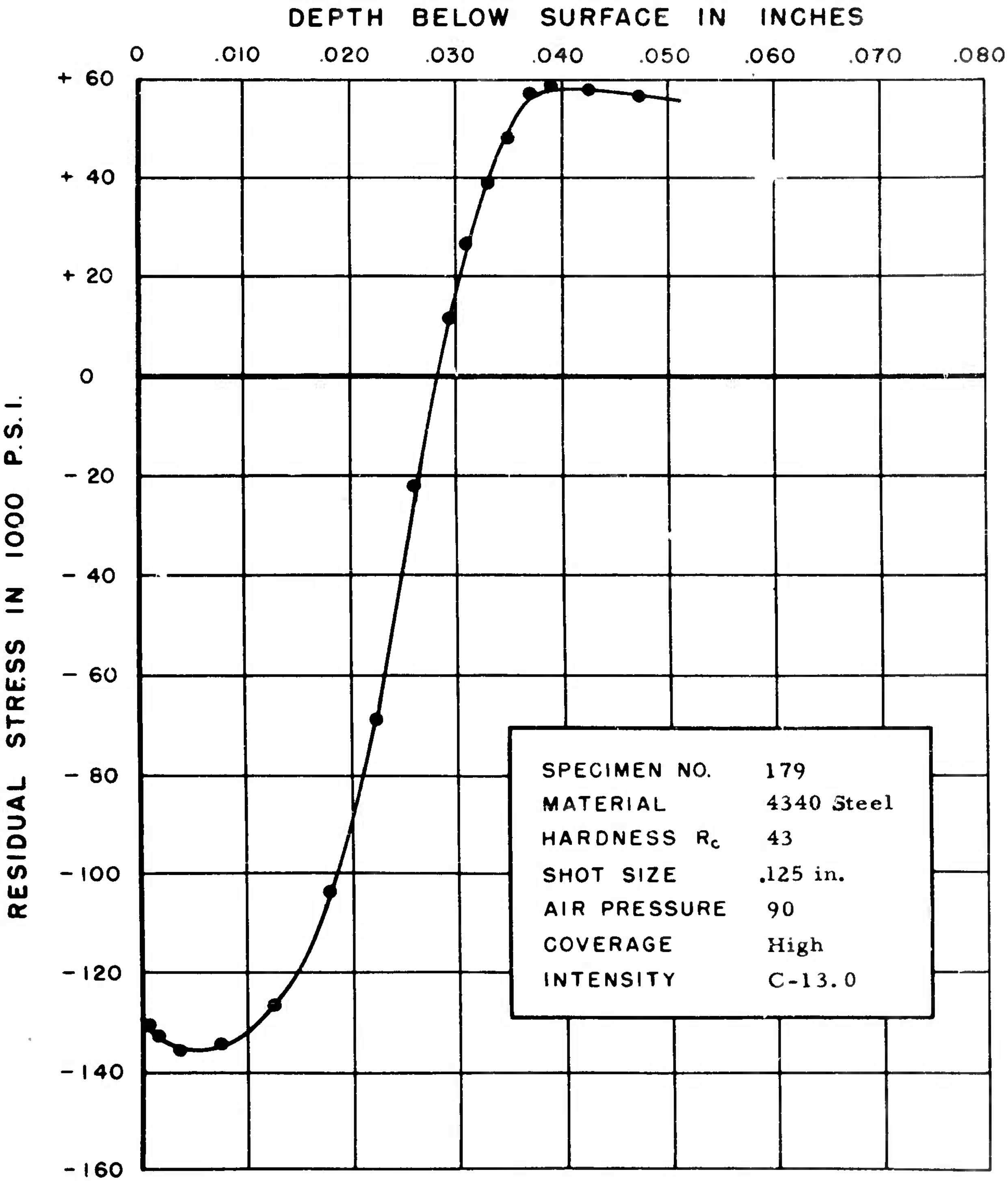


FIGURE 212. RESIDUAL STRESS DISTRIBUTION

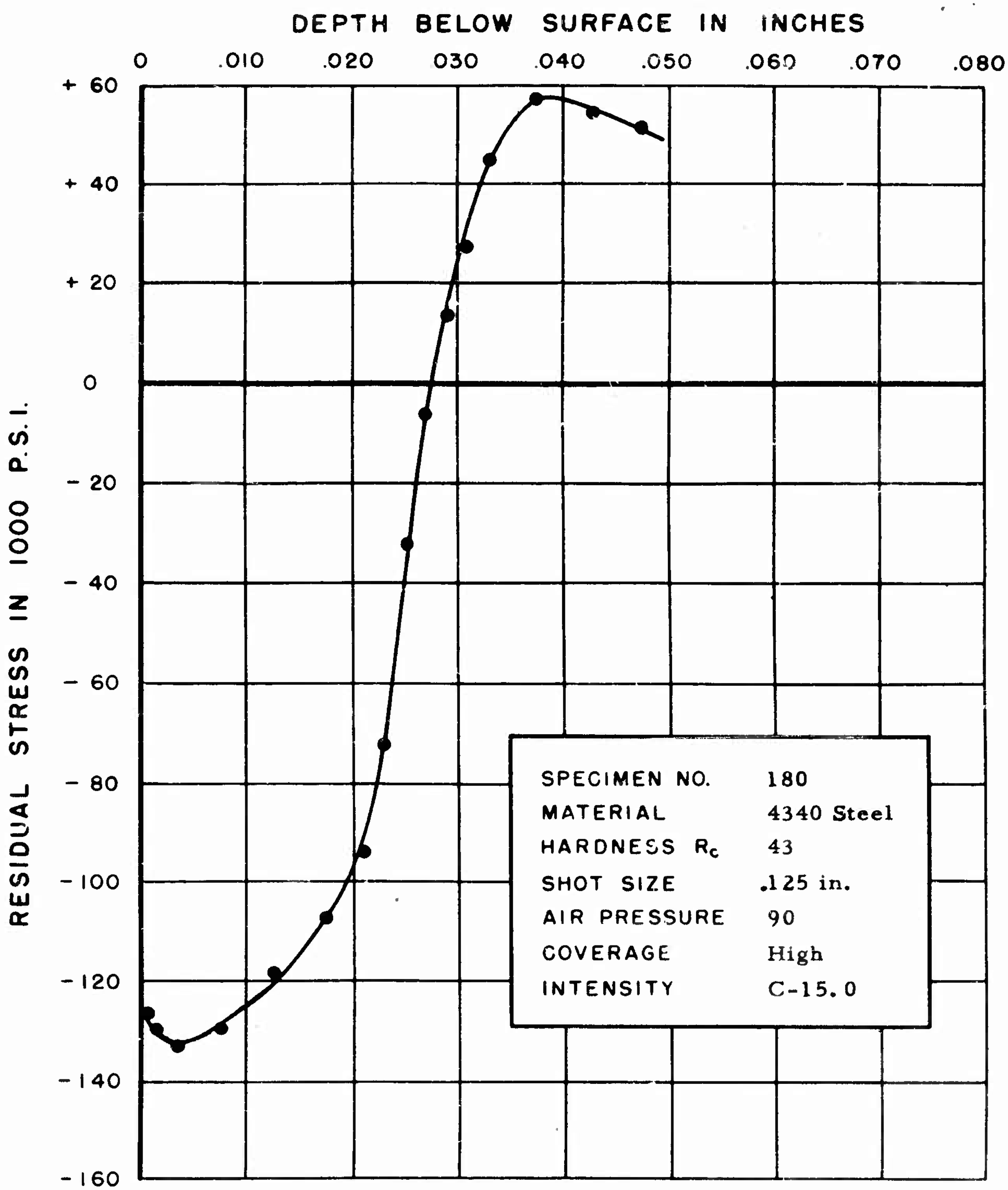
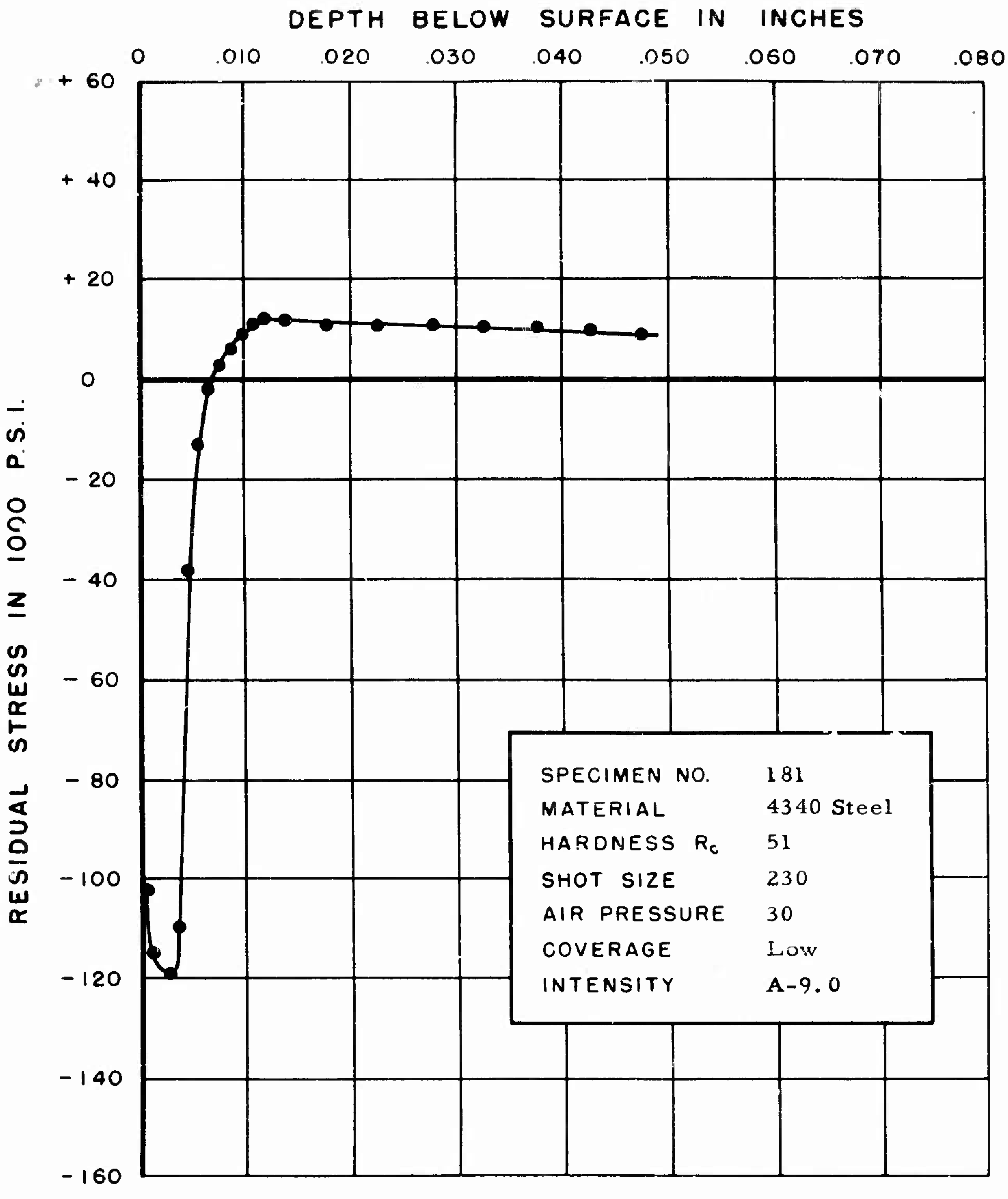


FIGURE 213. RESIDUAL STRESS DISTRIBUTION



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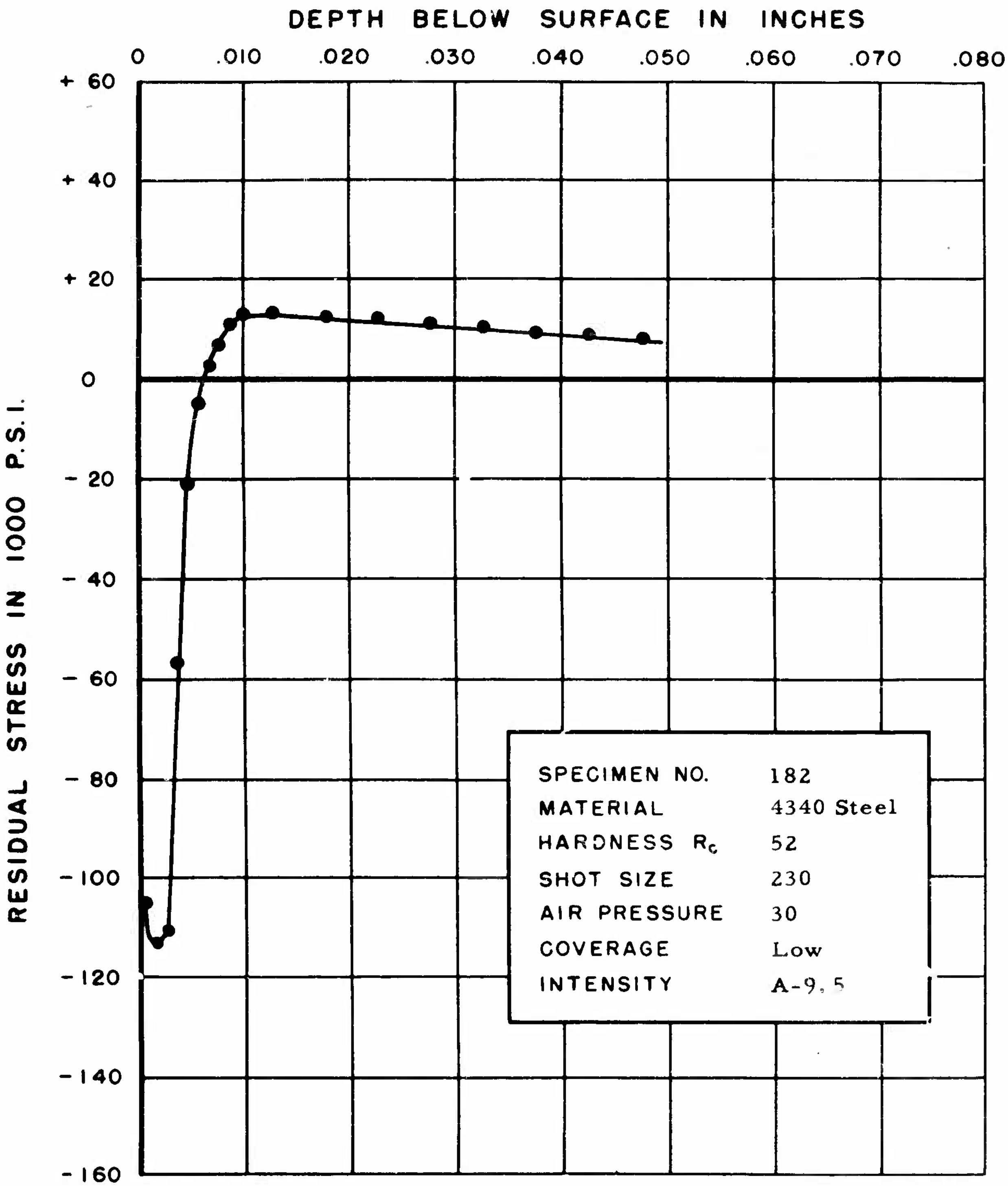

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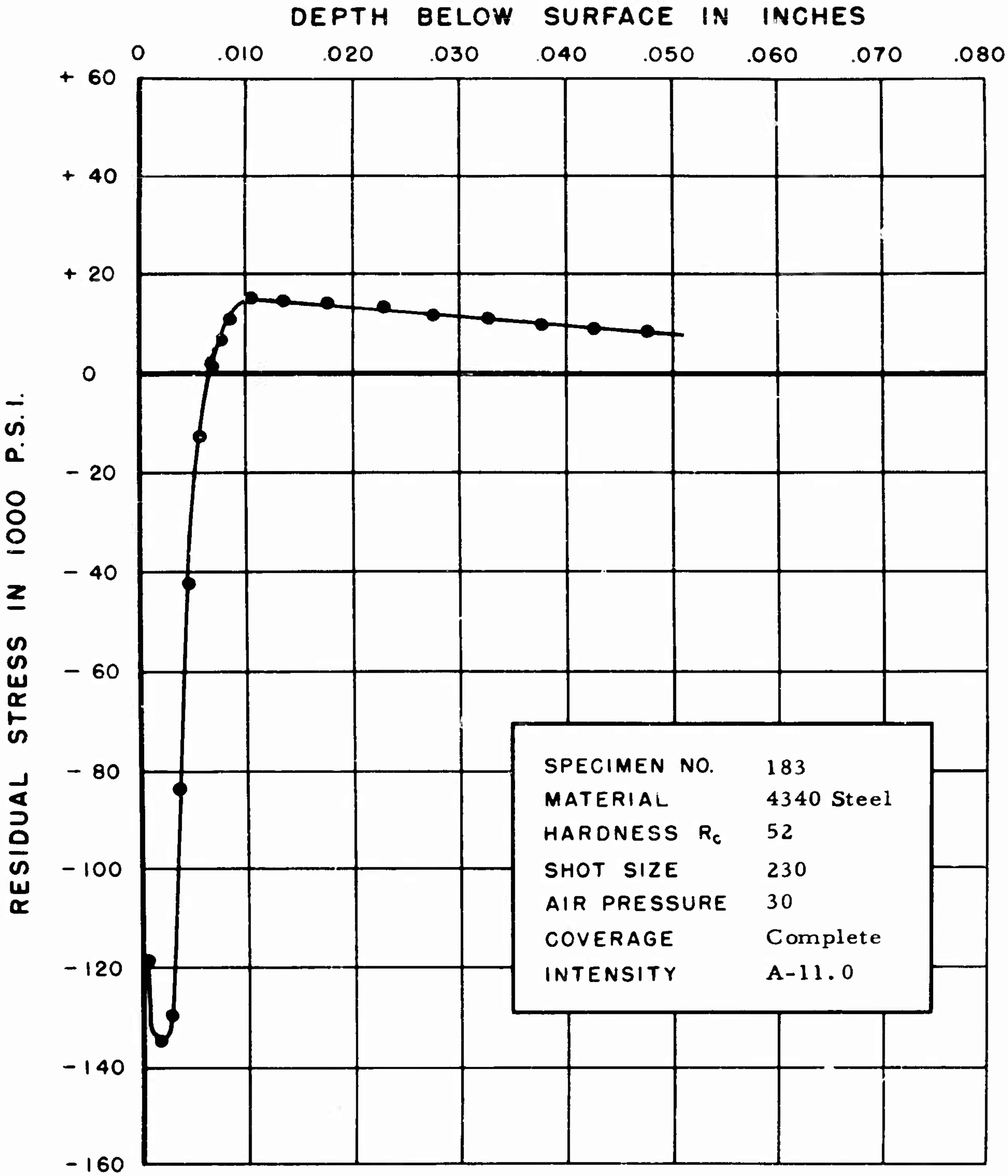

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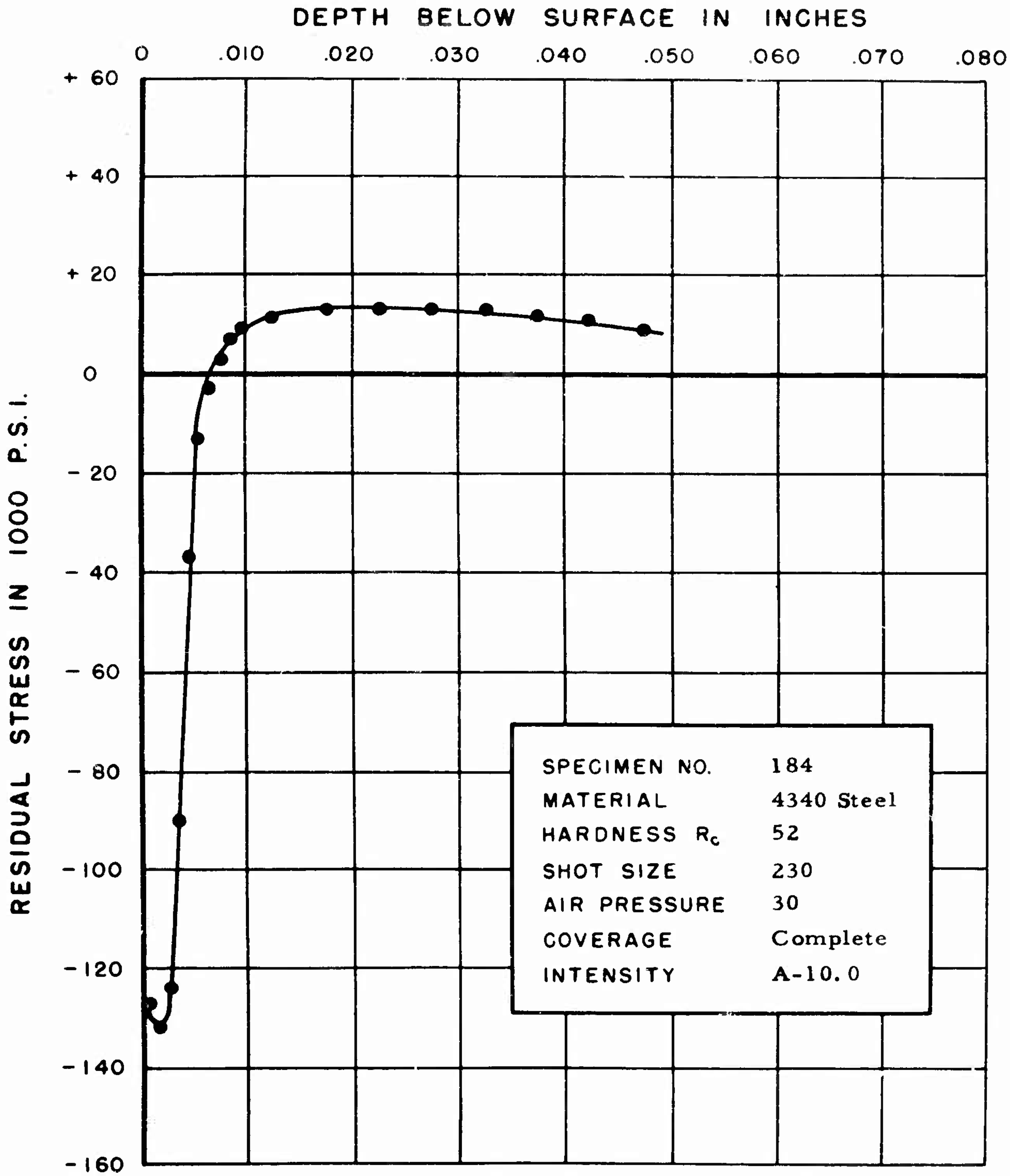


FIGURE 217. RESIDUAL STRESS DISTRIBUTION

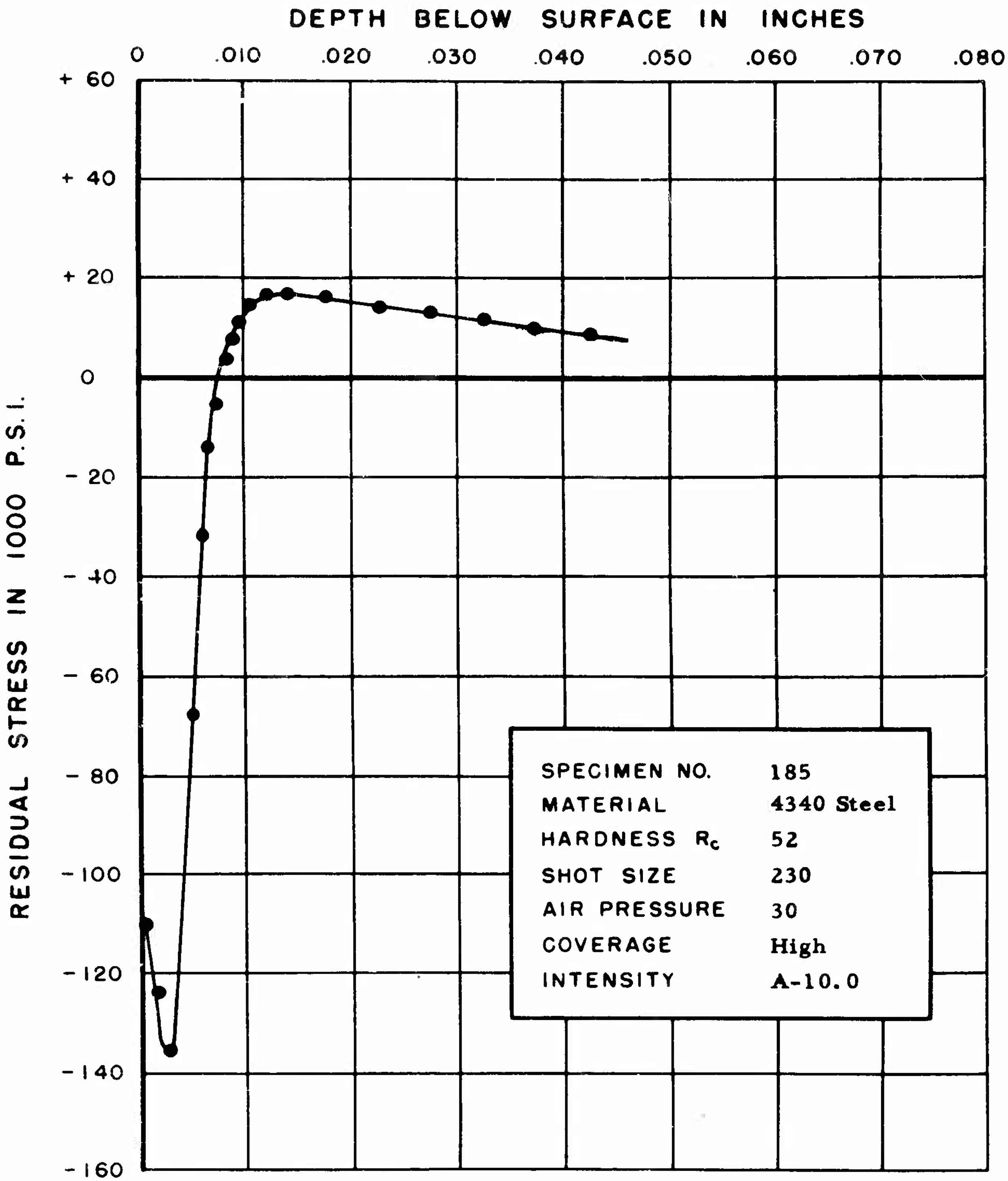


FIGURE 218. RESIDUAL STRESS DISTRIBUTION

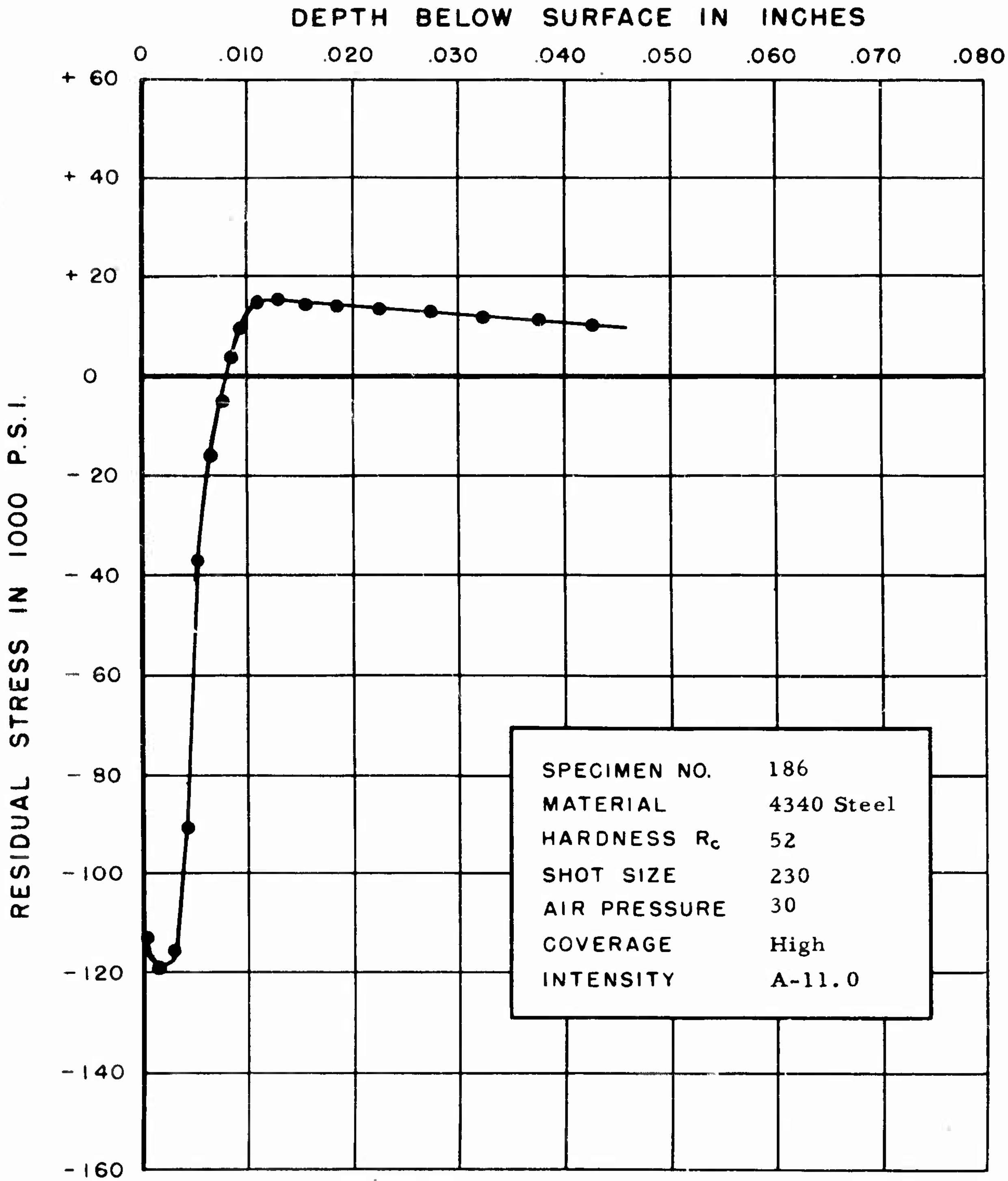


FIGURE 219. RESIDUAL STRESS DISTRIBUTION

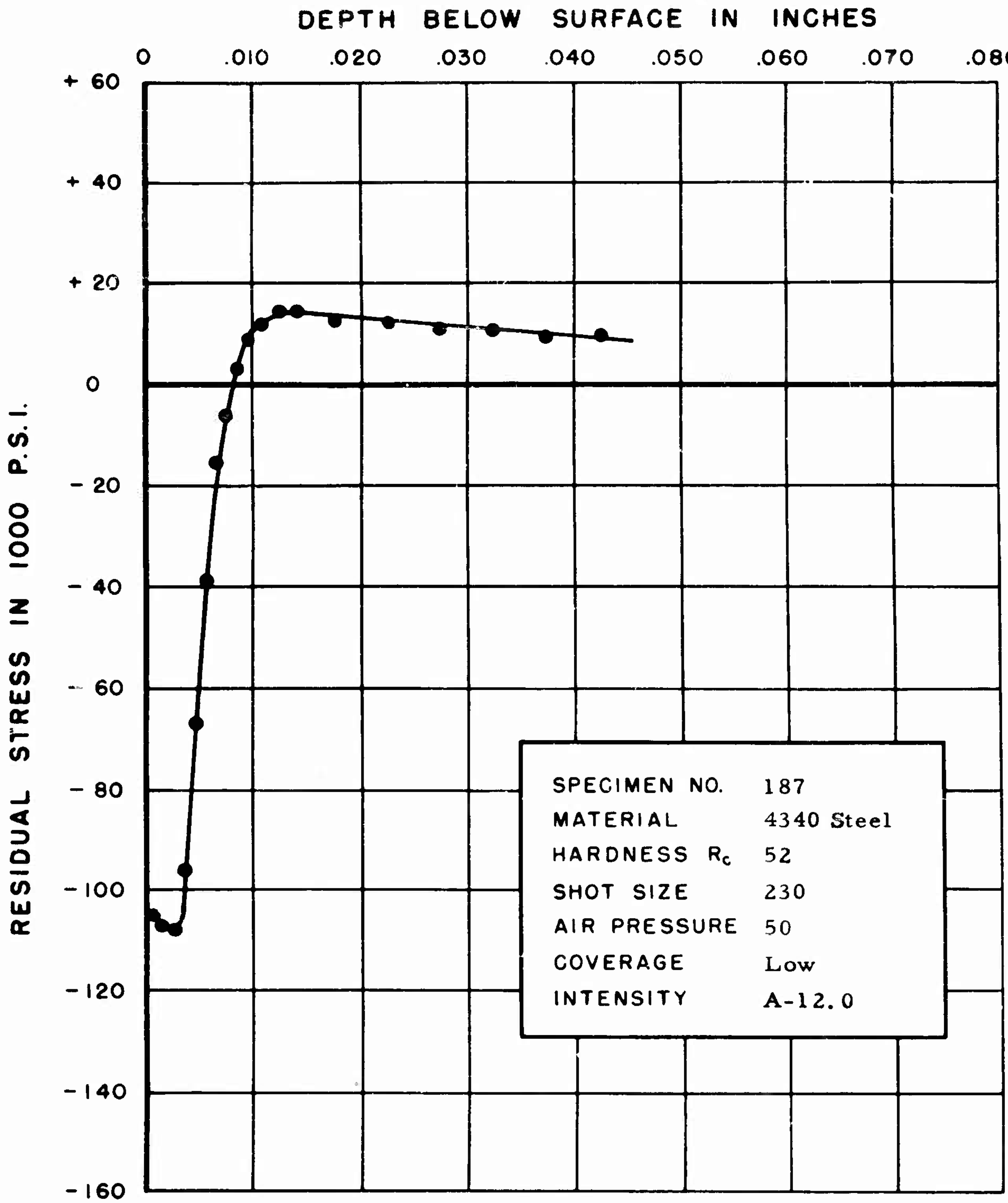


FIGURE 220. RESIDUAL STRESS DISTRIBUTION

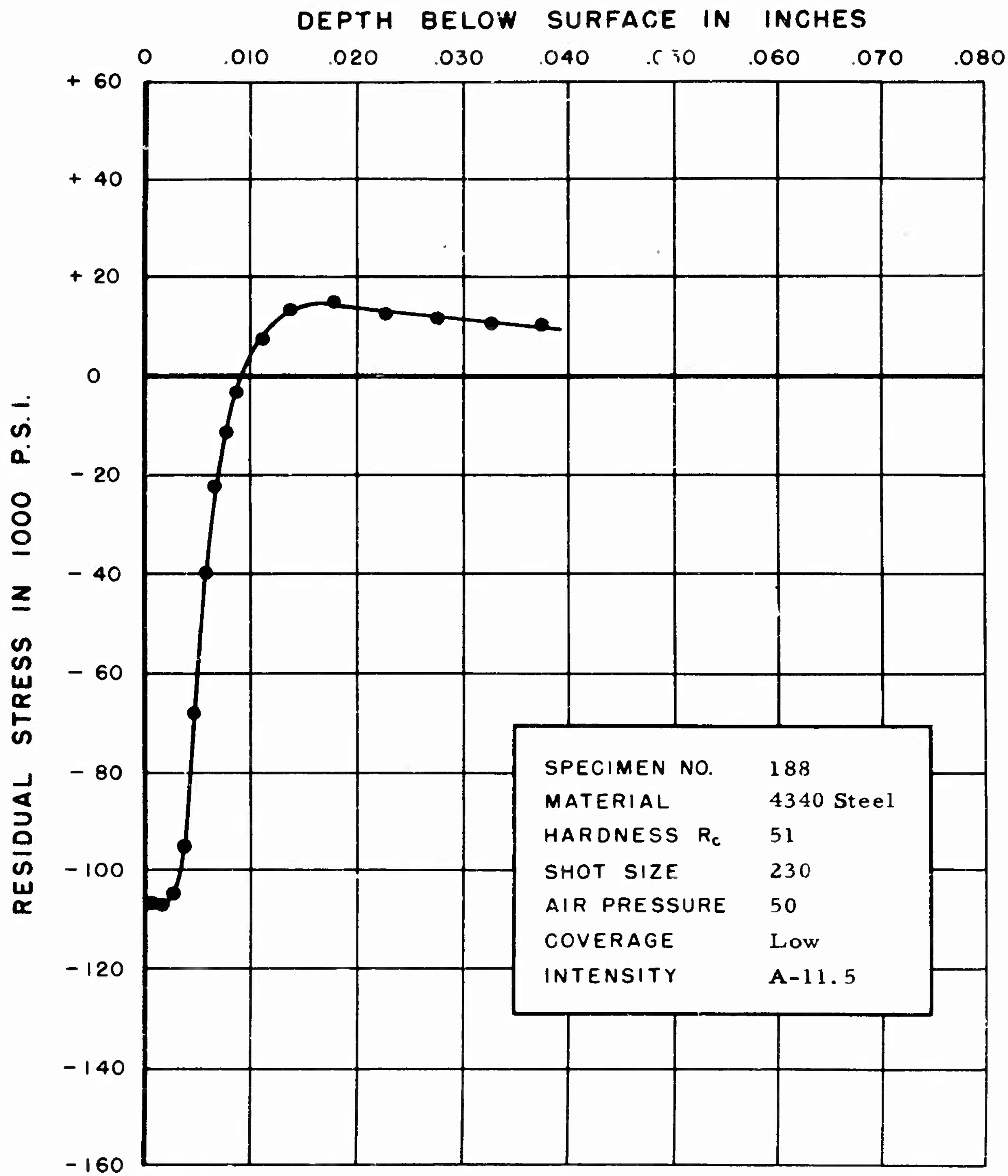


FIGURE 221. RESIDUAL STRESS DISTRIBUTION

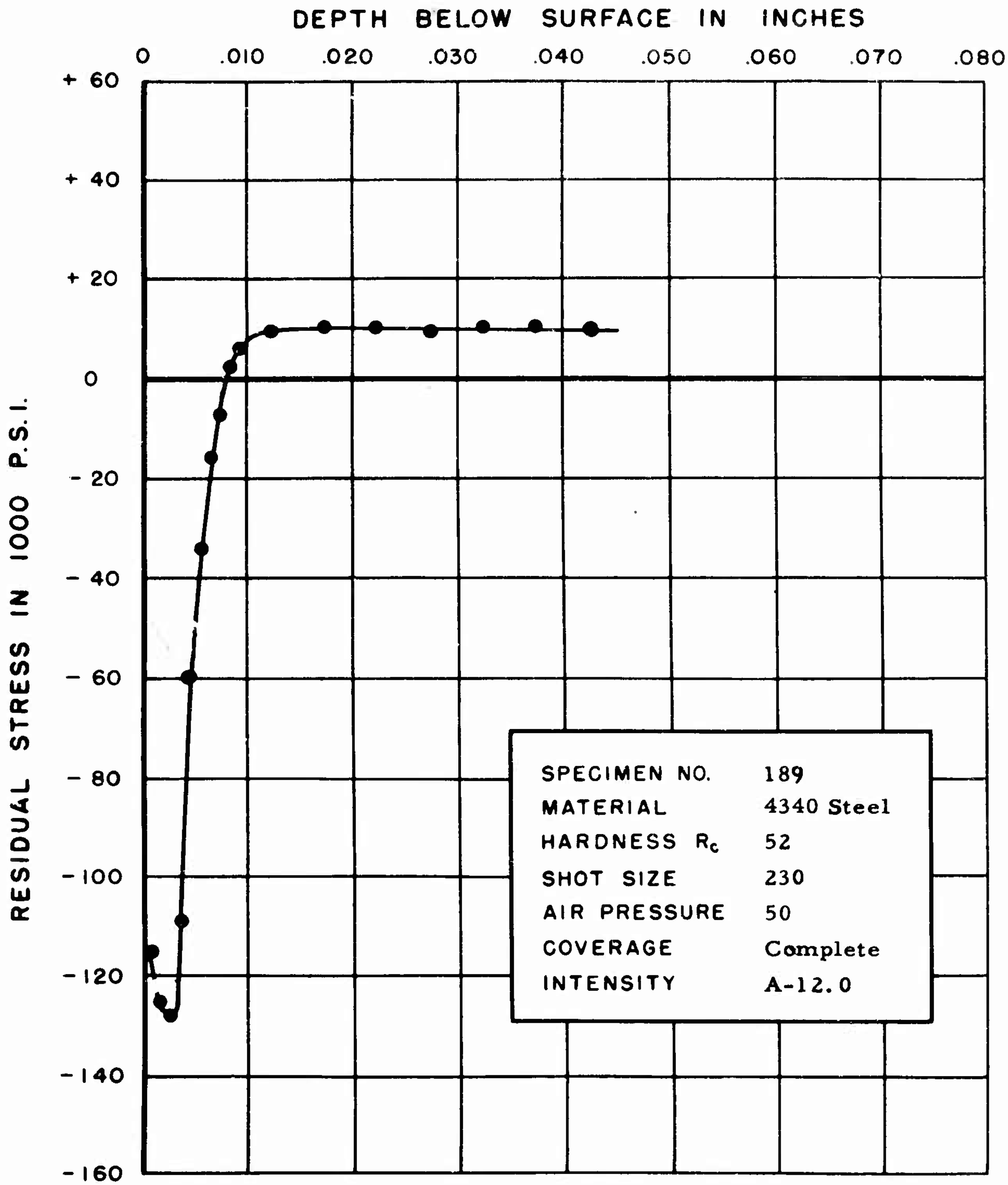
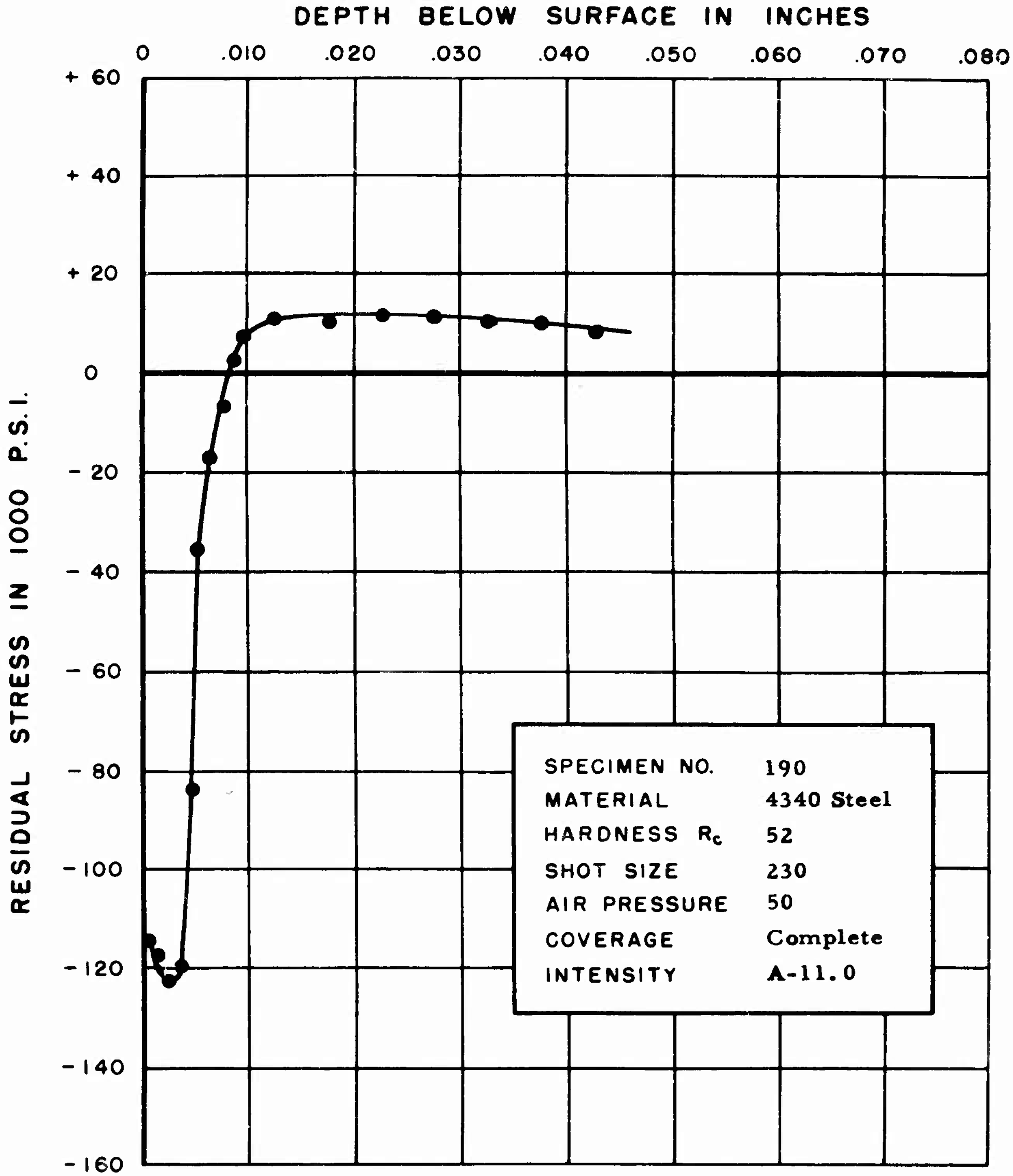


FIGURE 222. RESIDUAL STRESS DISTRIBUTION



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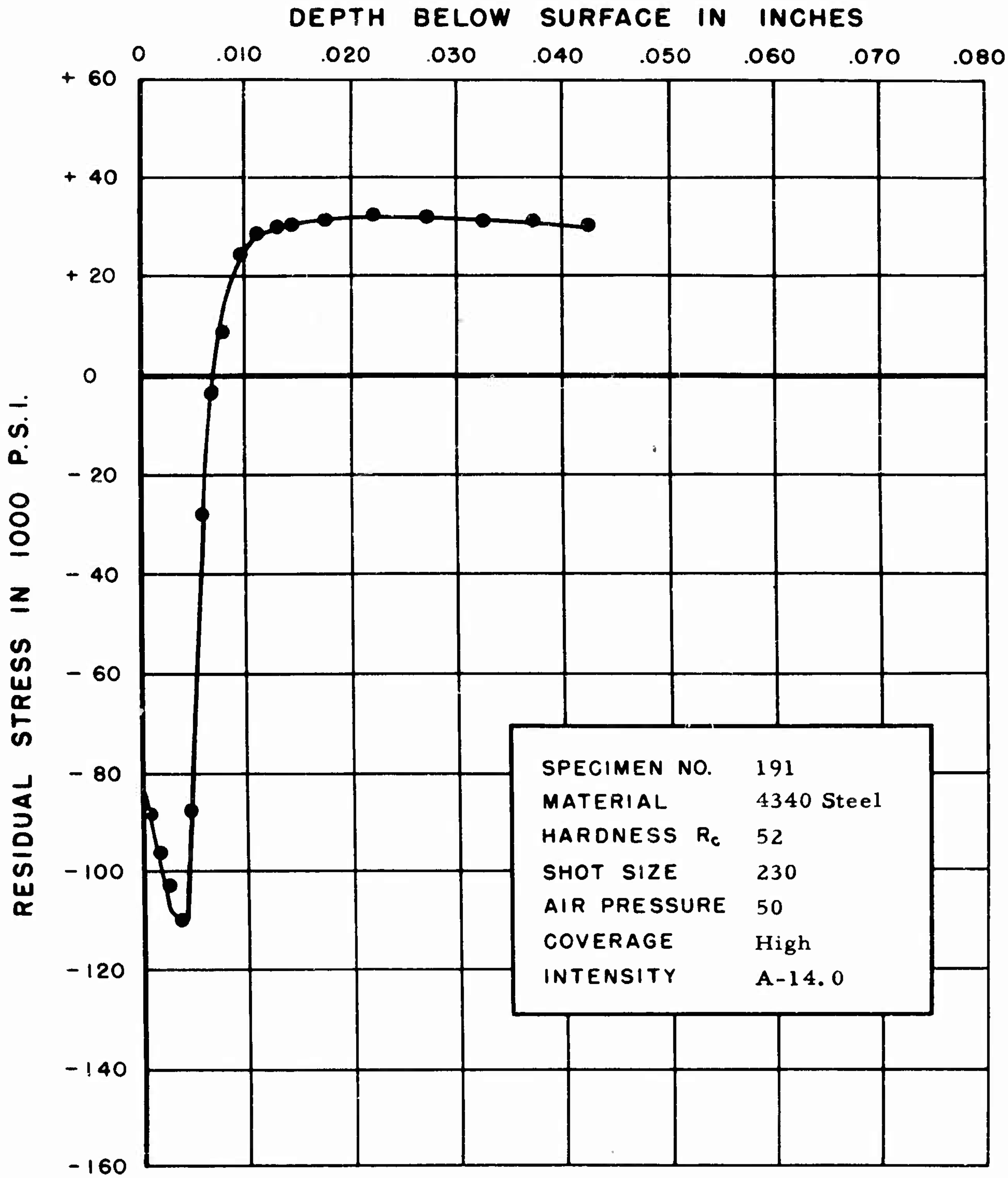
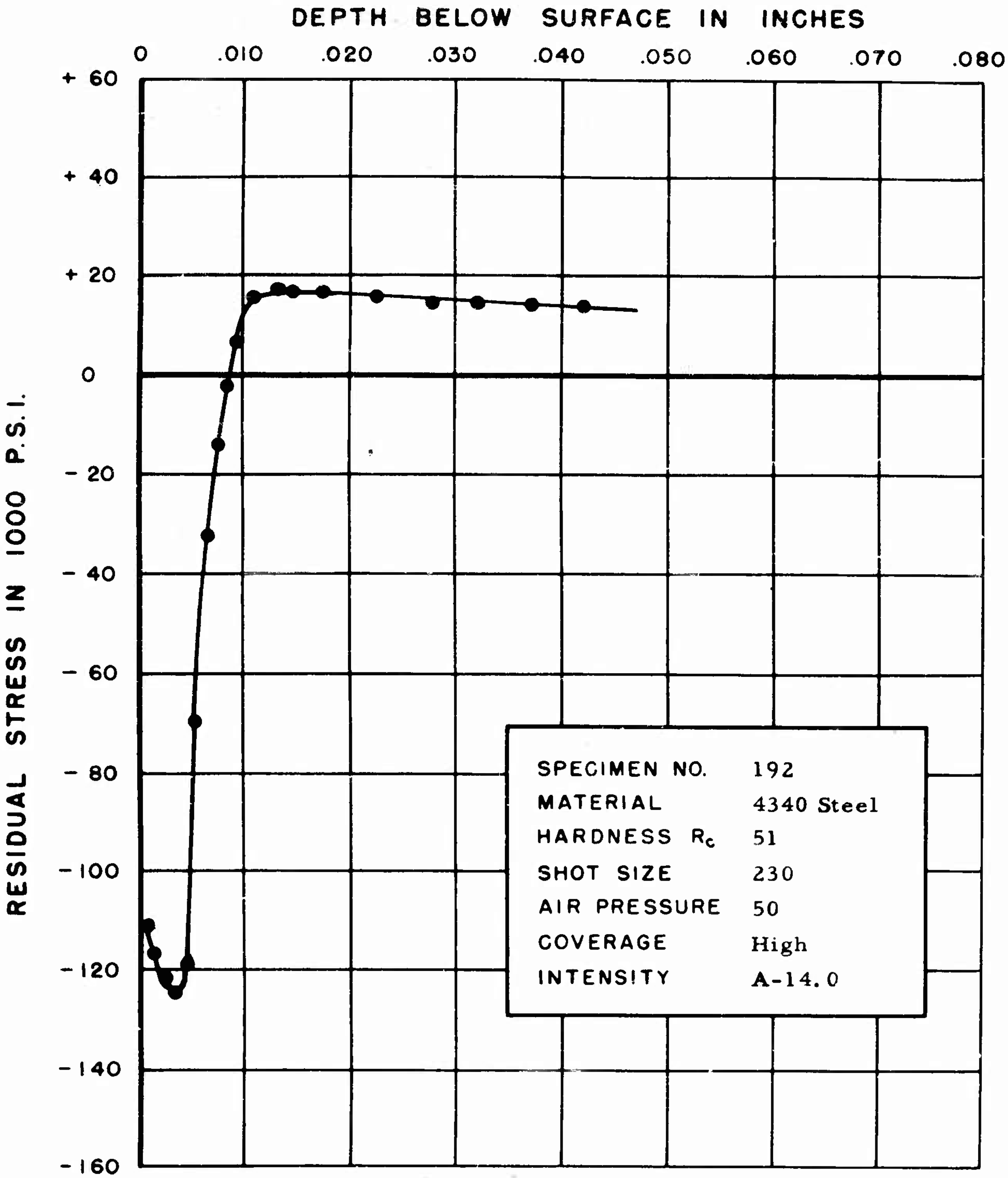


FIGURE 224. RESIDUAL STRESS DISTRIBUTION



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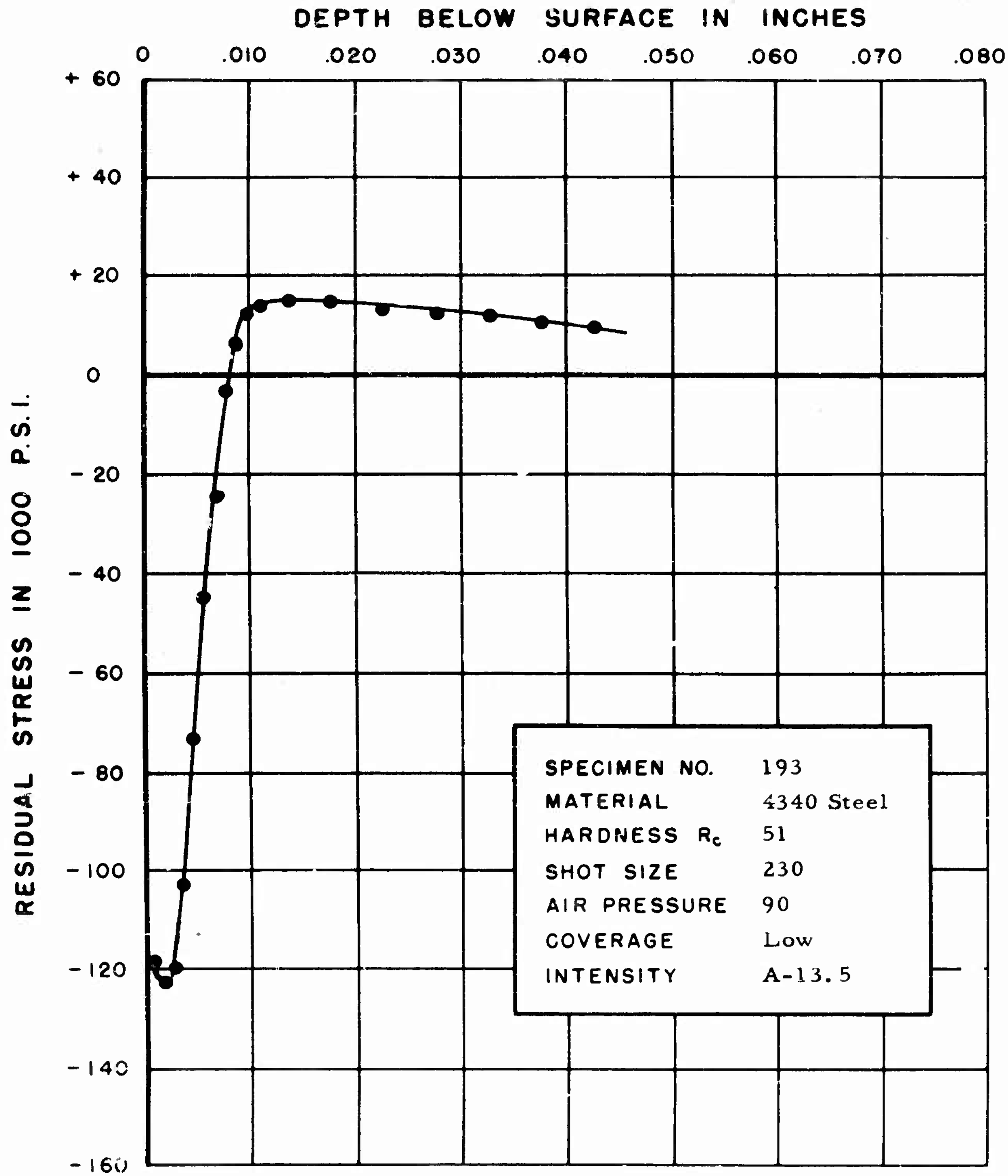

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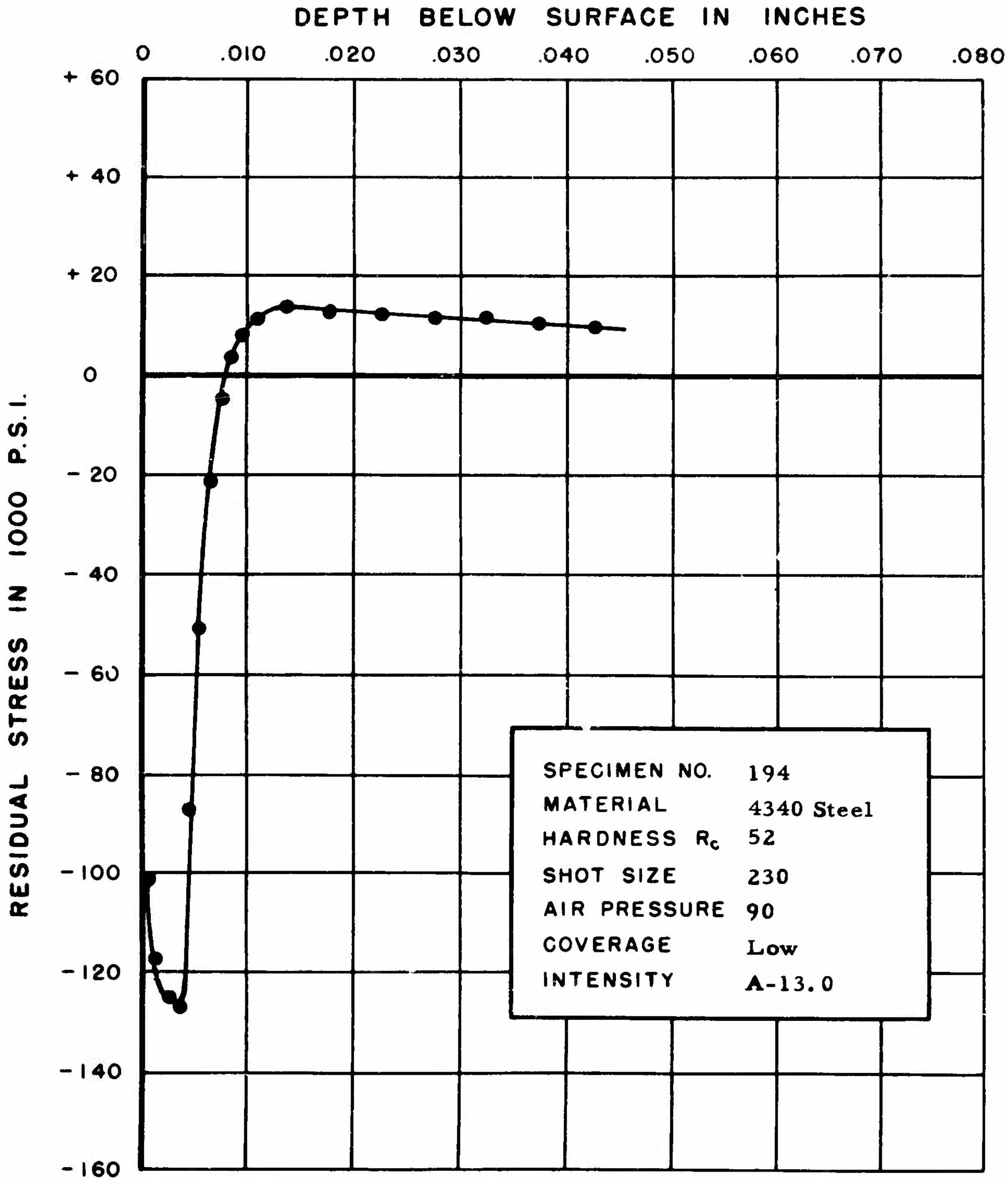

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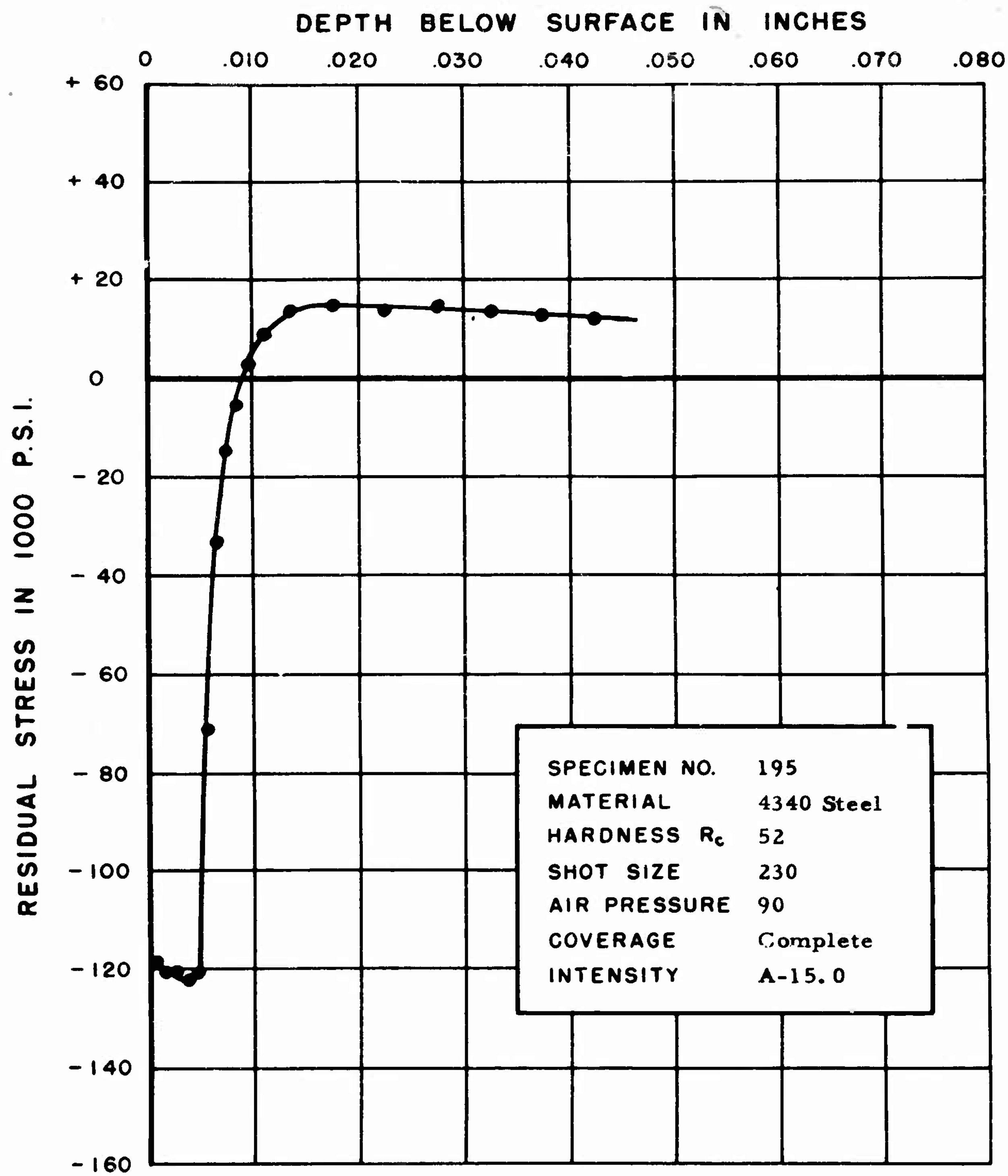

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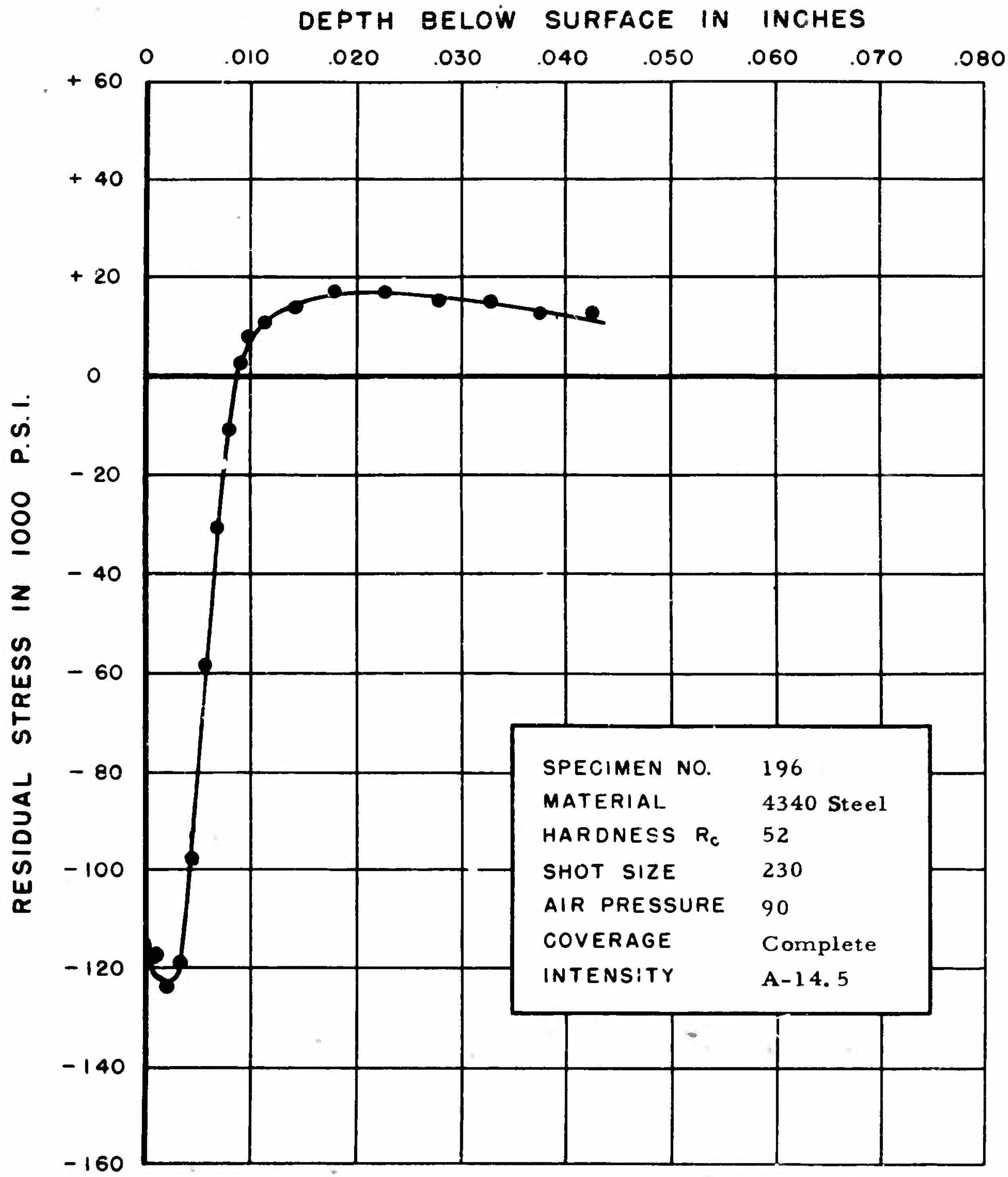

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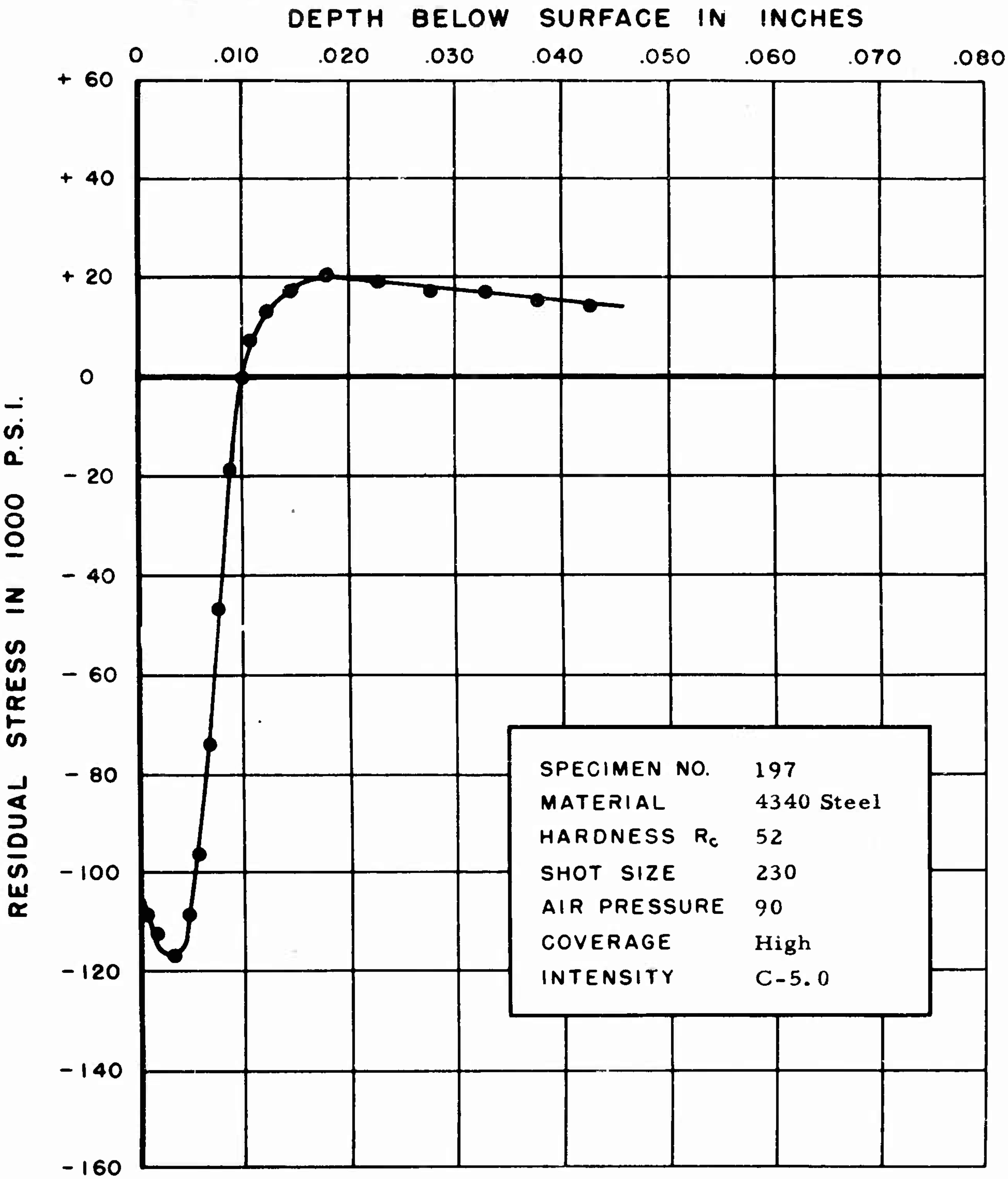

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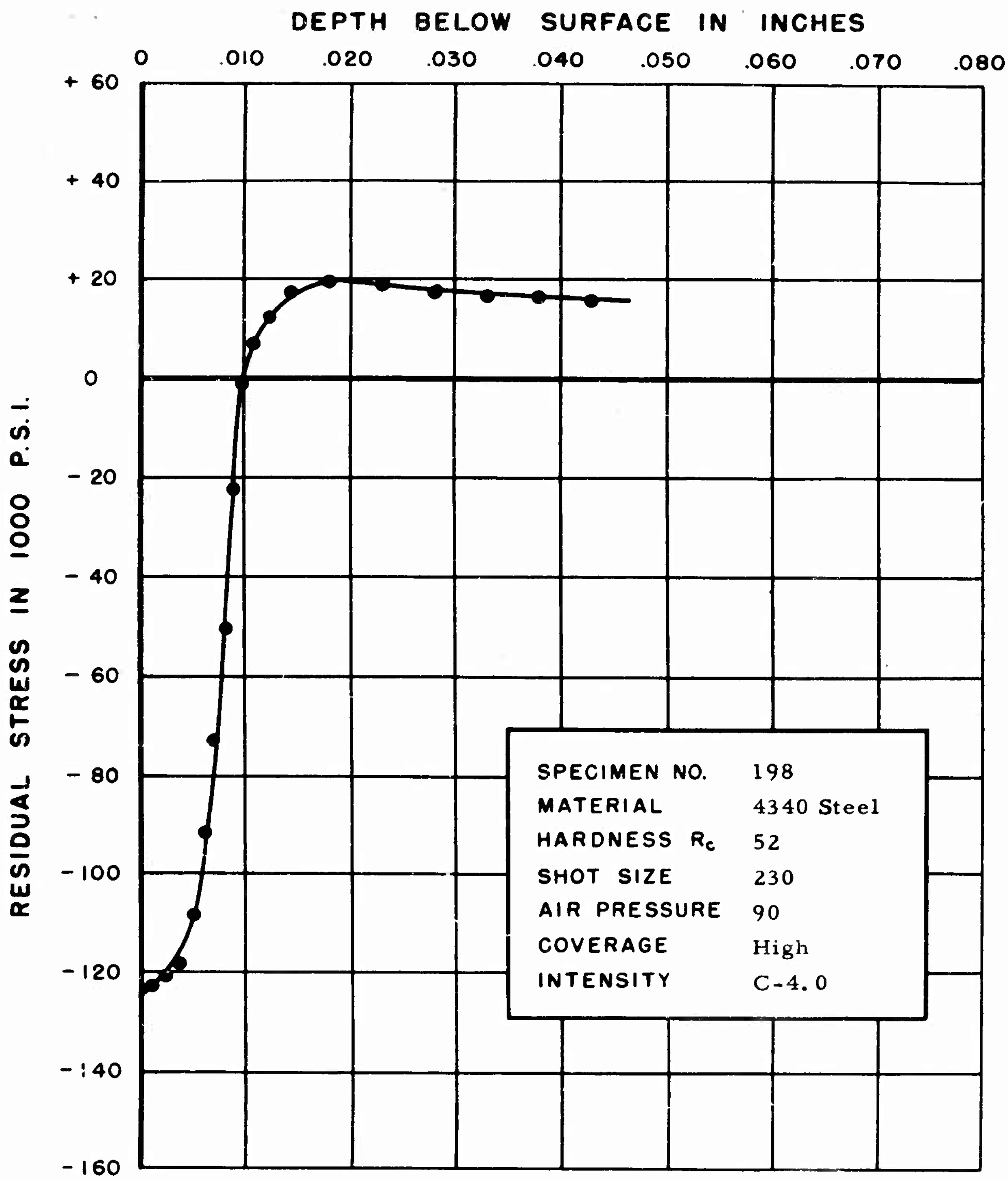
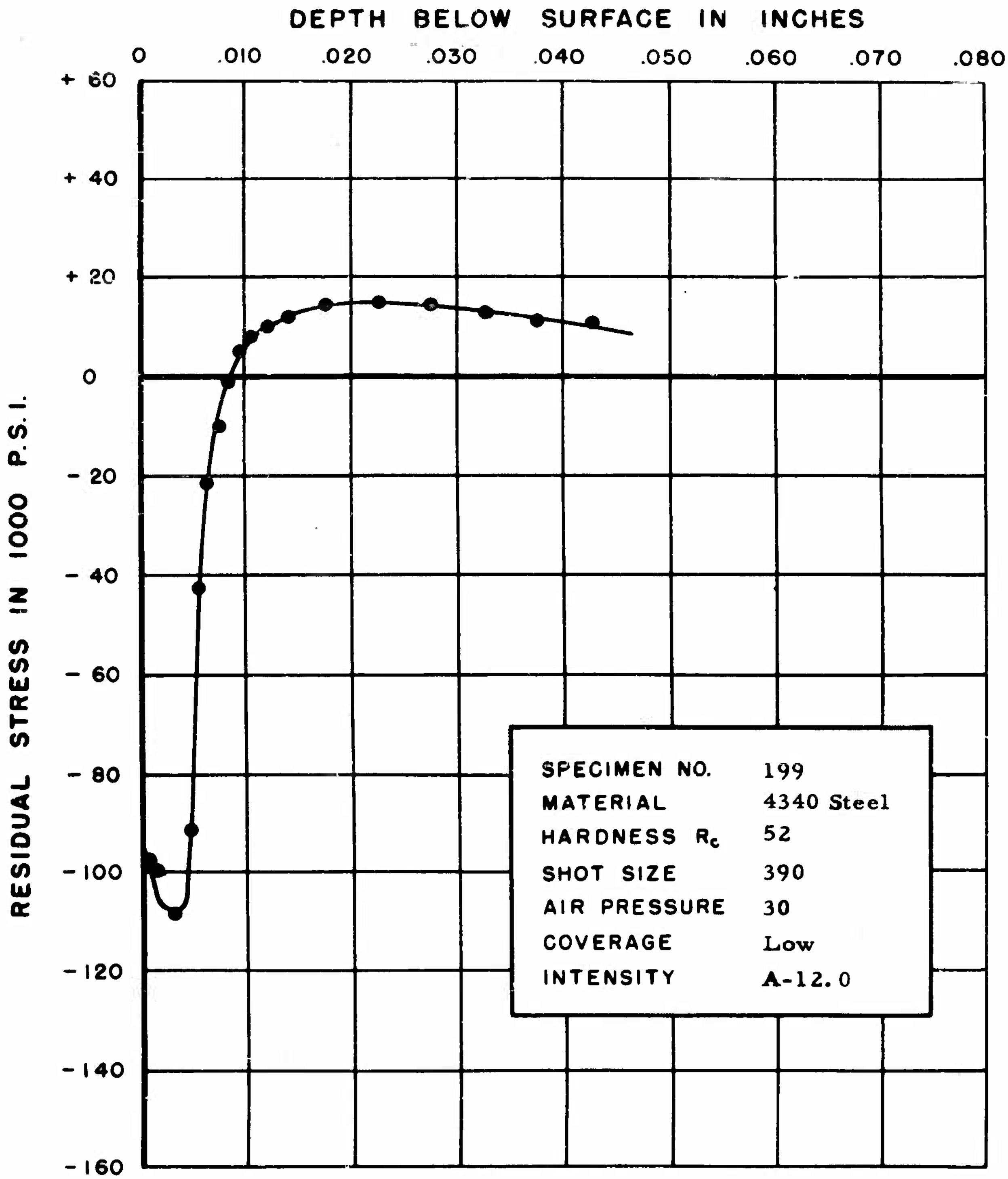


FIGURE 231. RESIDUAL STRESS DISTRIBUTION



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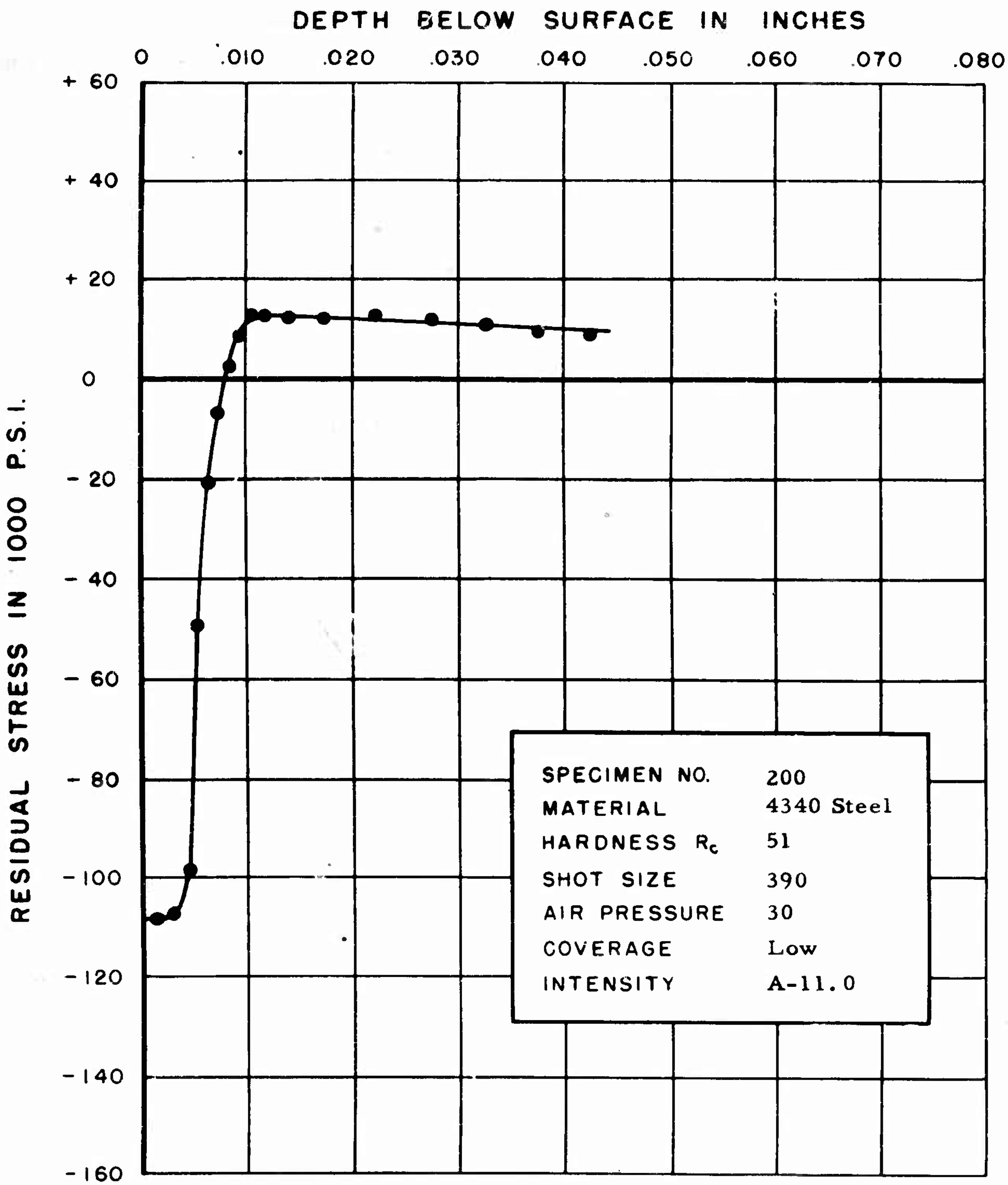


FIGURE 233. RESIDUAL STRESS DISTRIBUTION

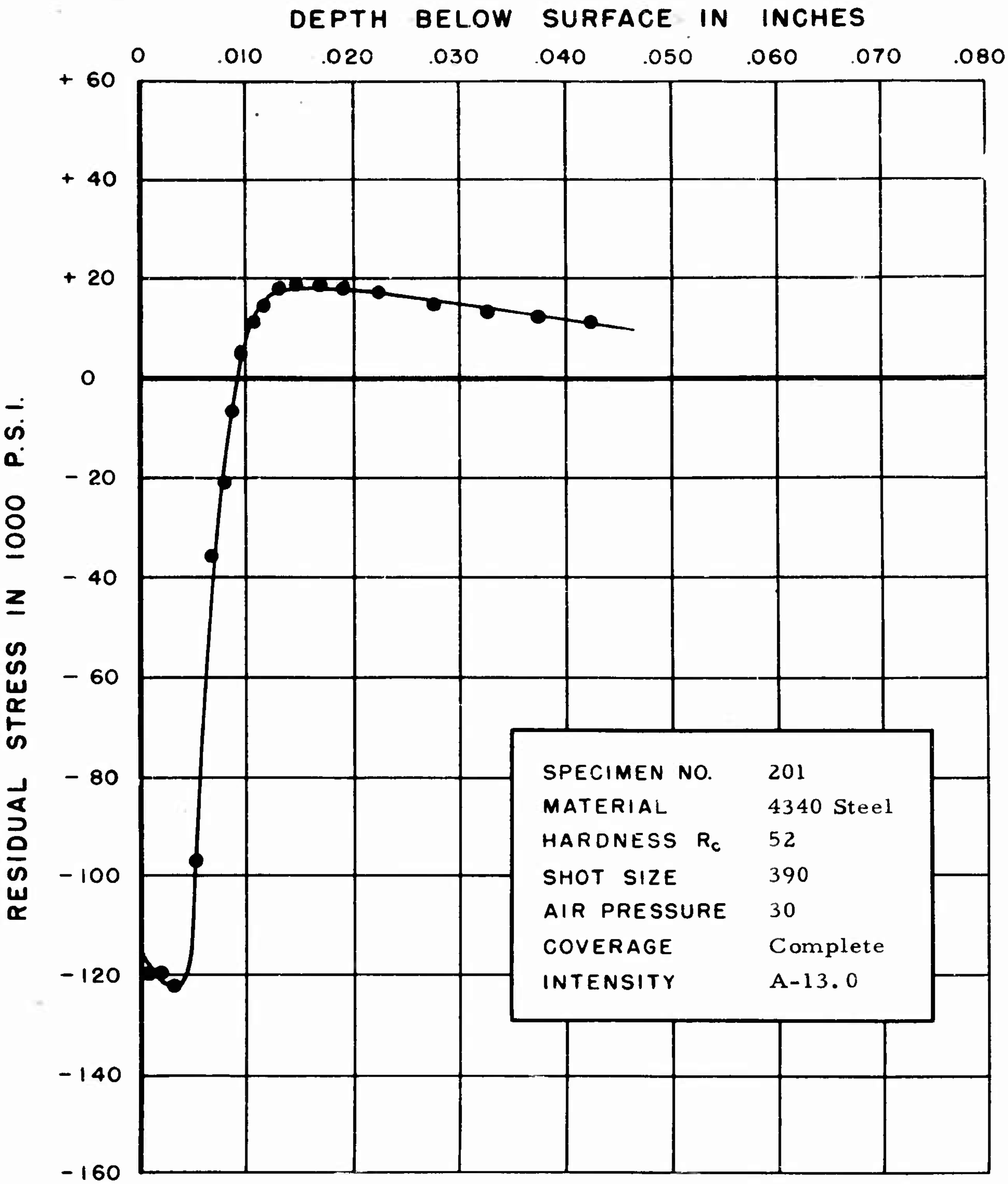
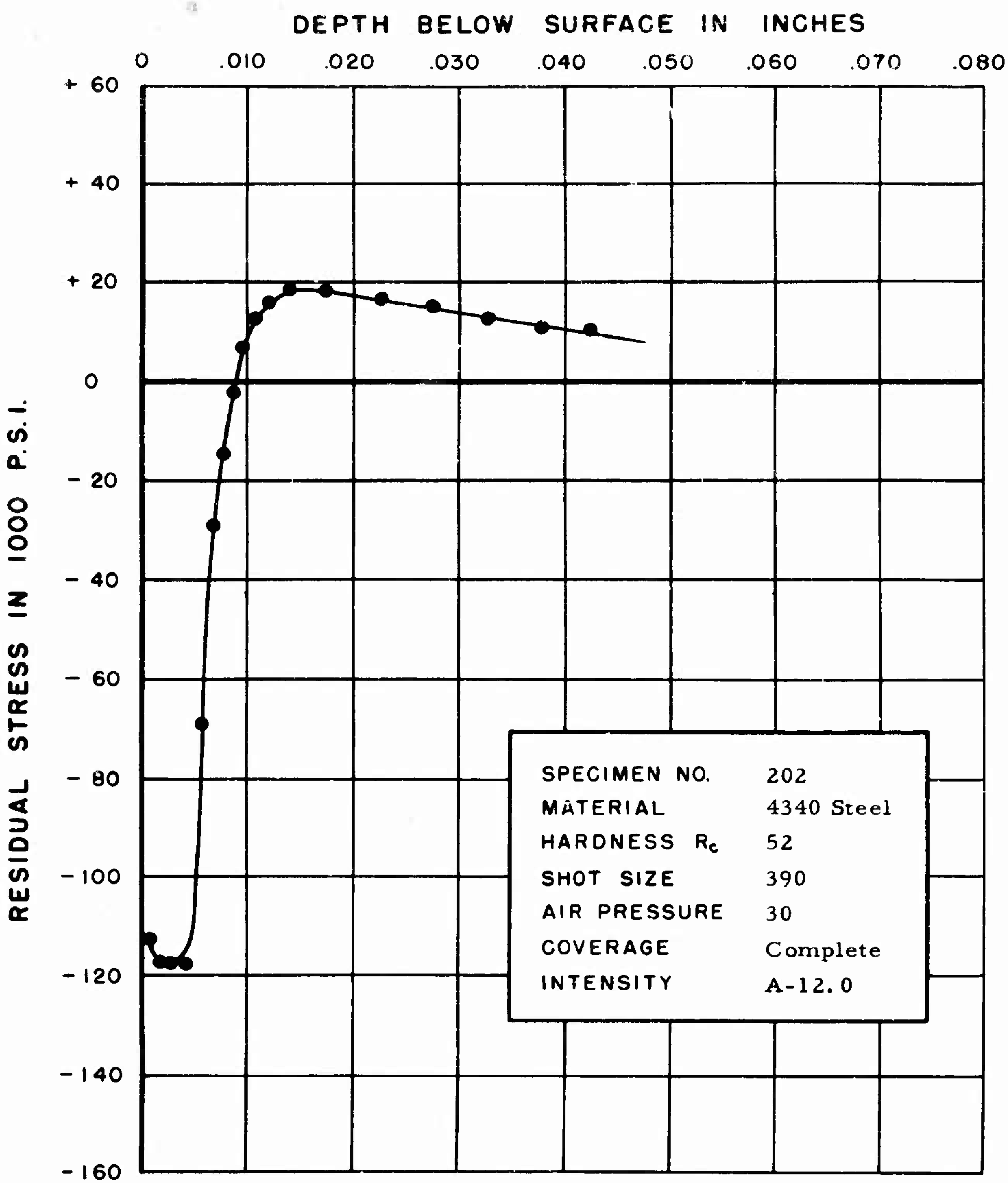


FIGURE 234. RESIDUAL STRESS DISTRIBUTION



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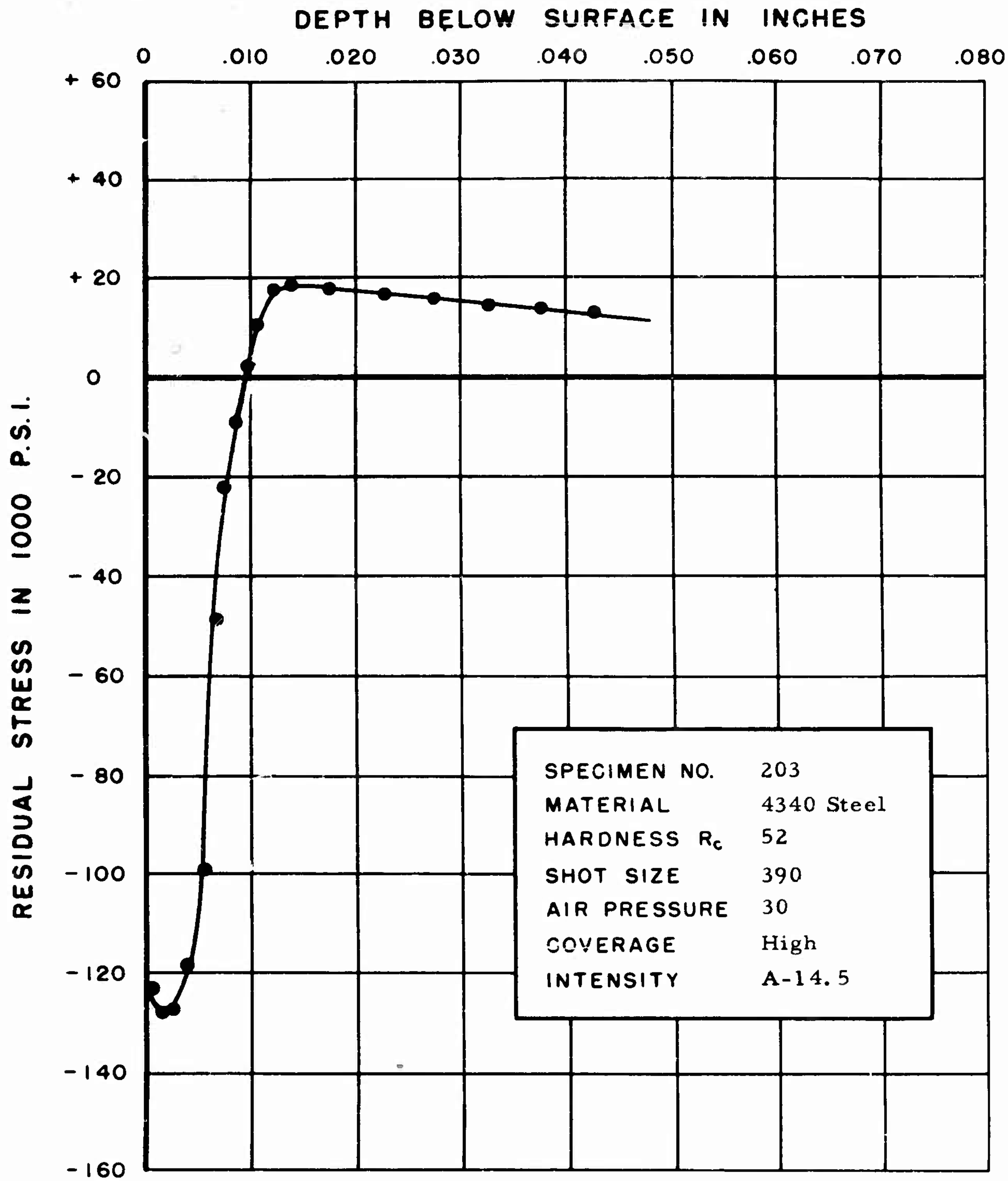

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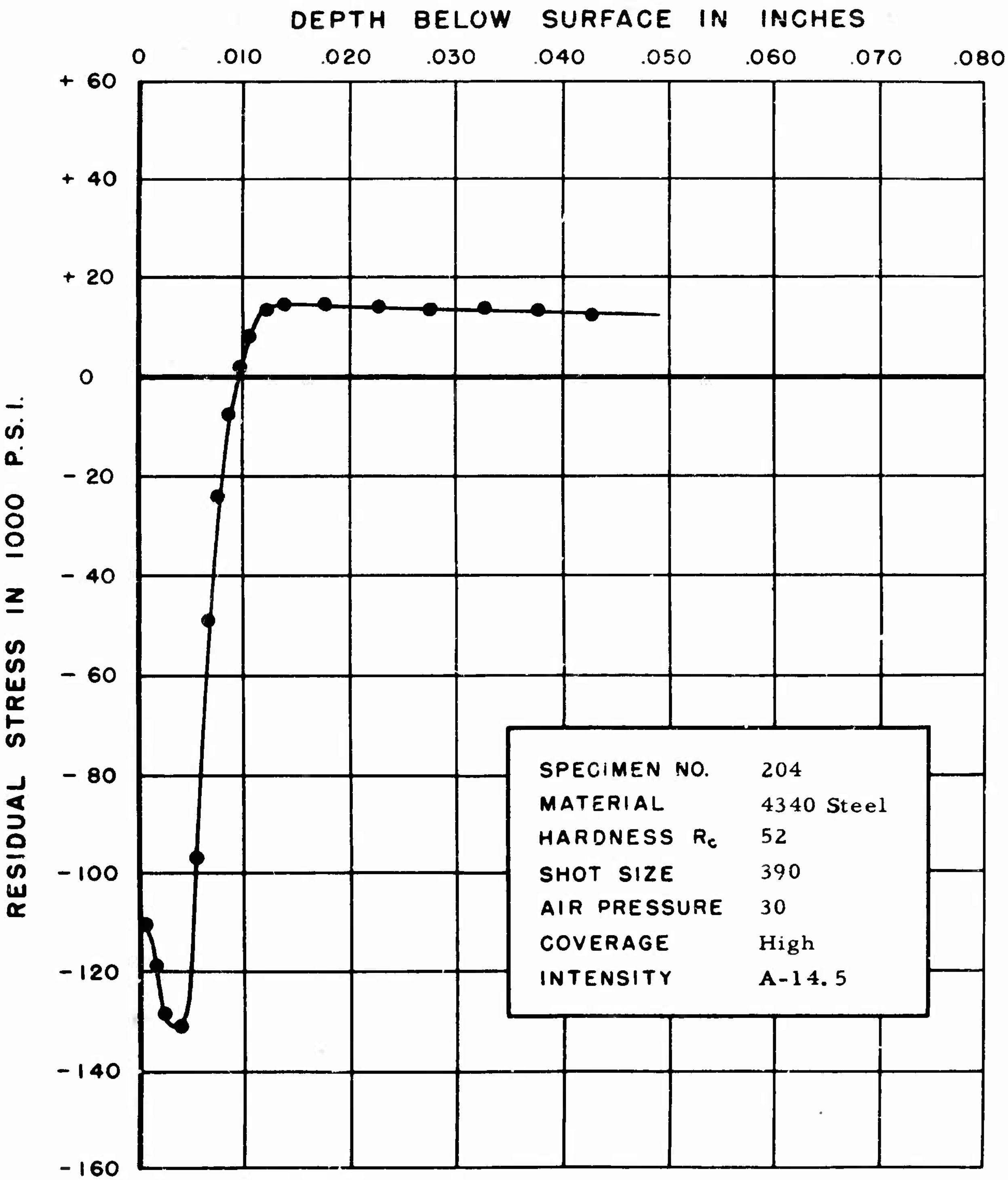

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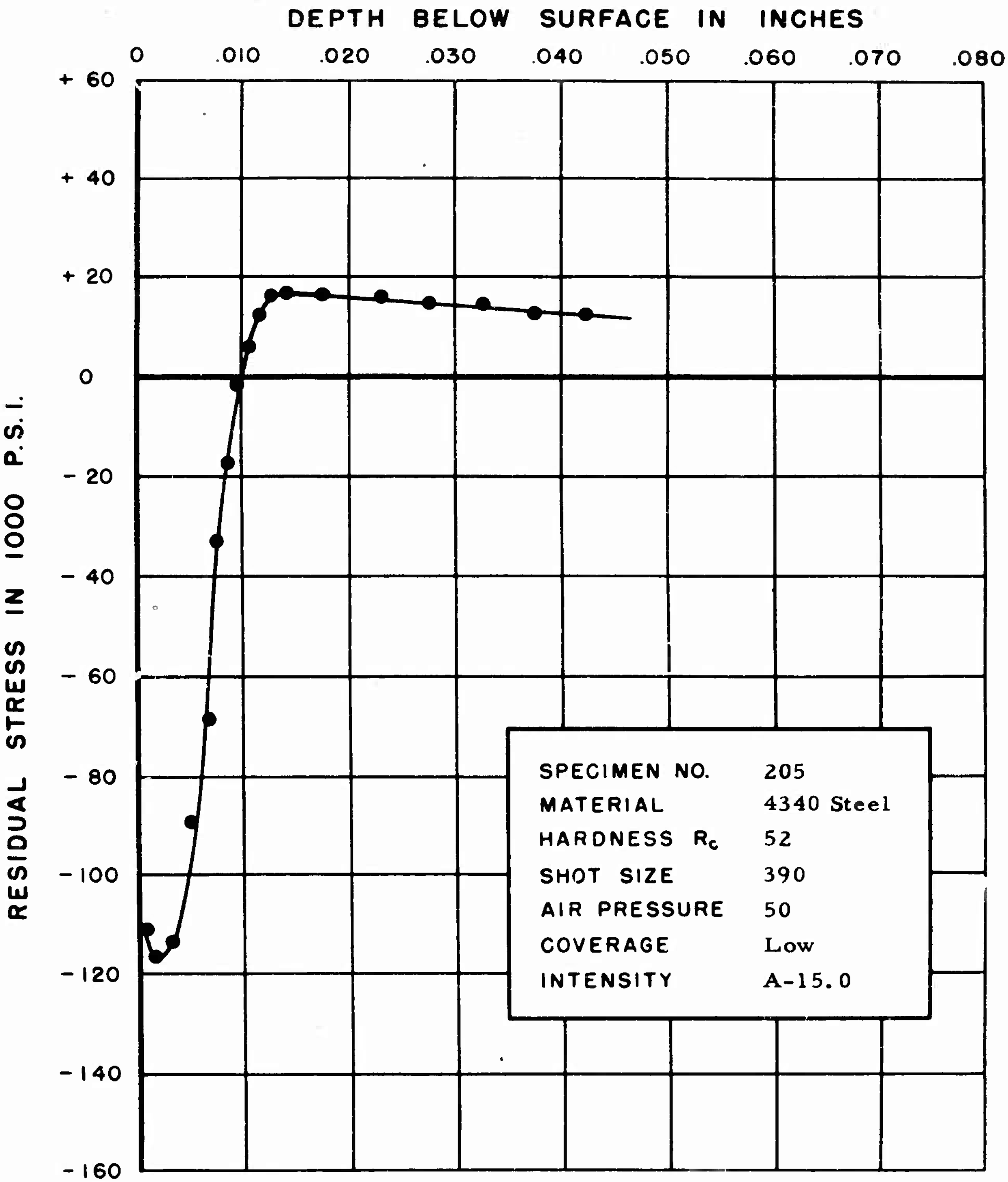

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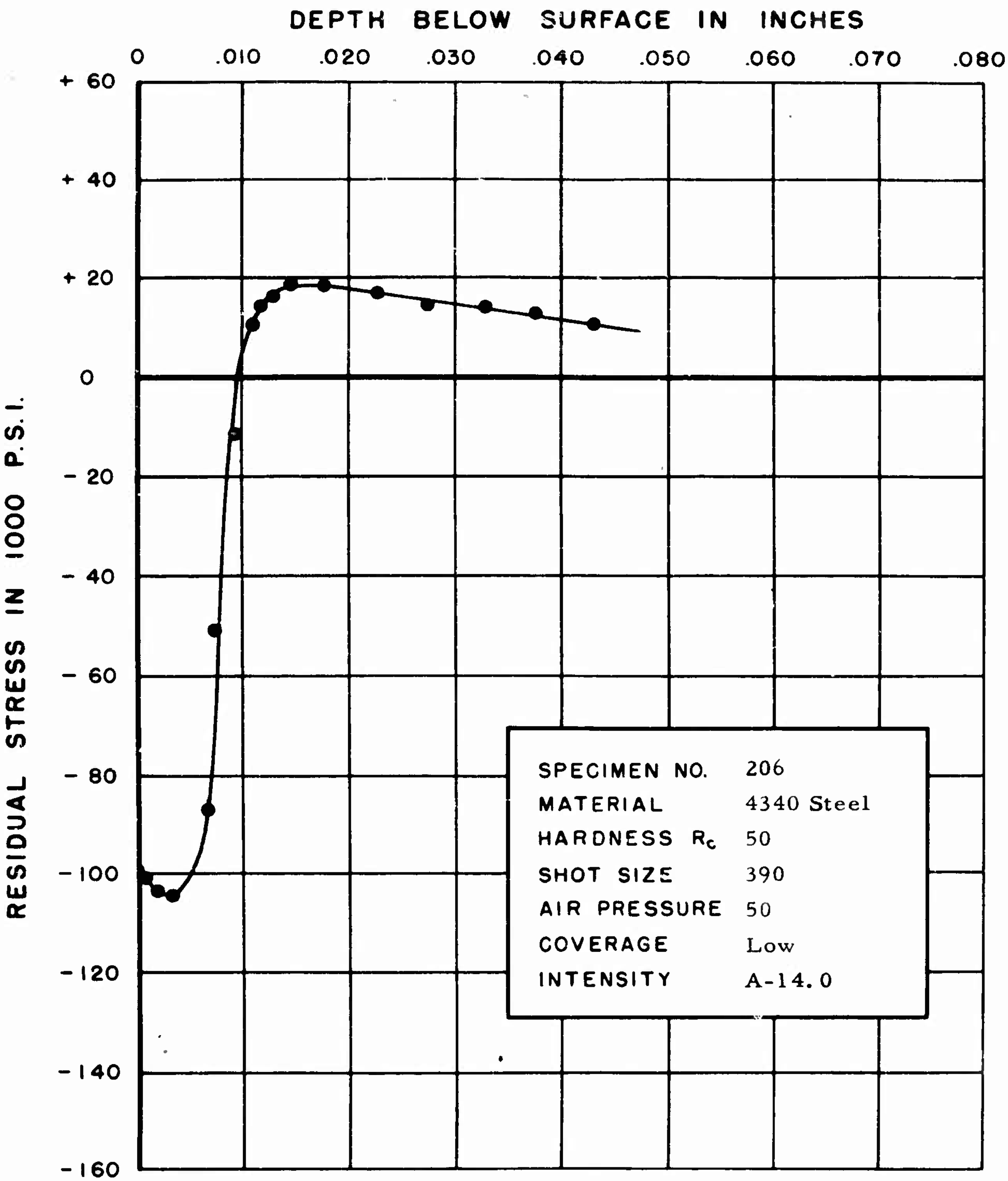

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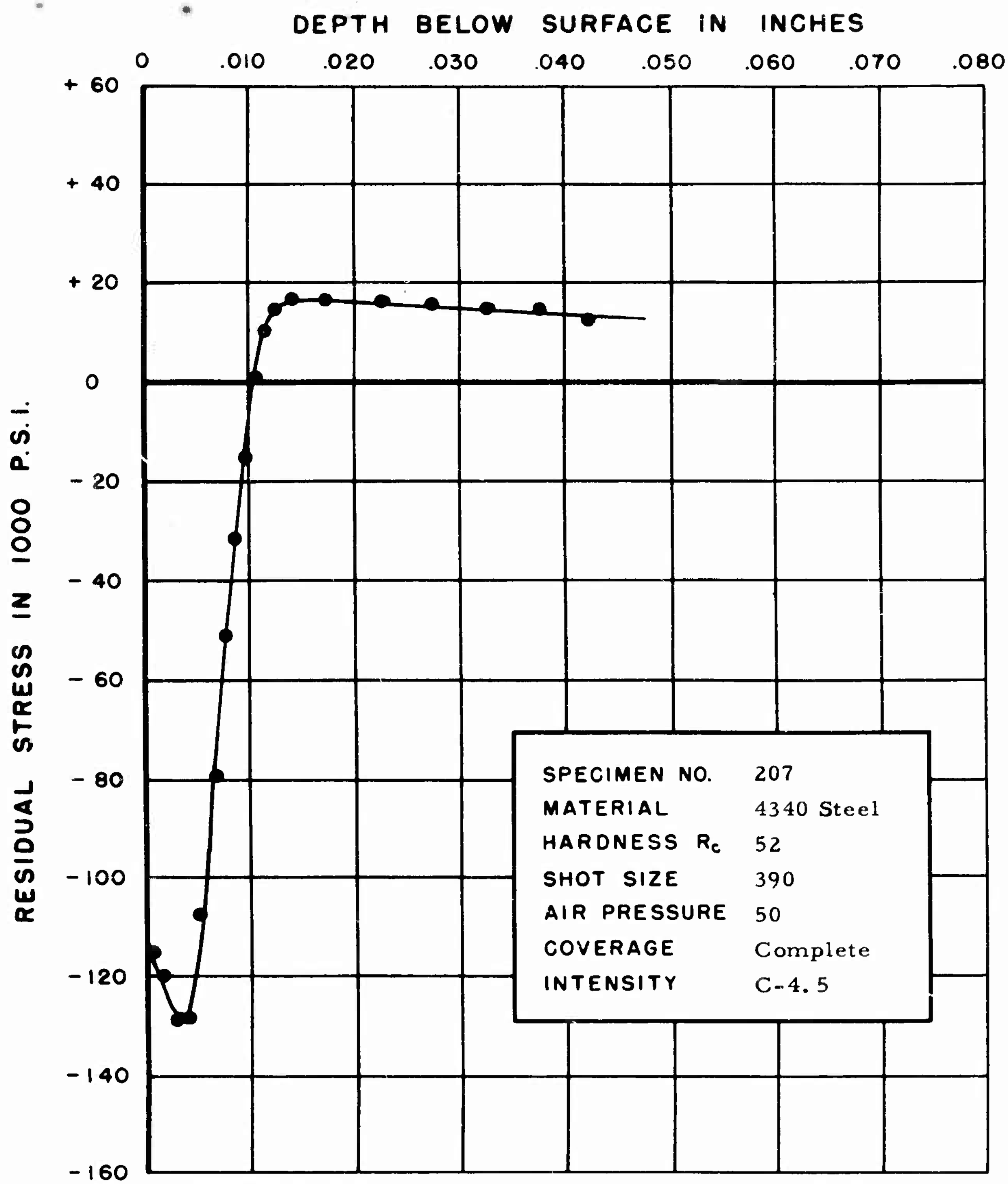

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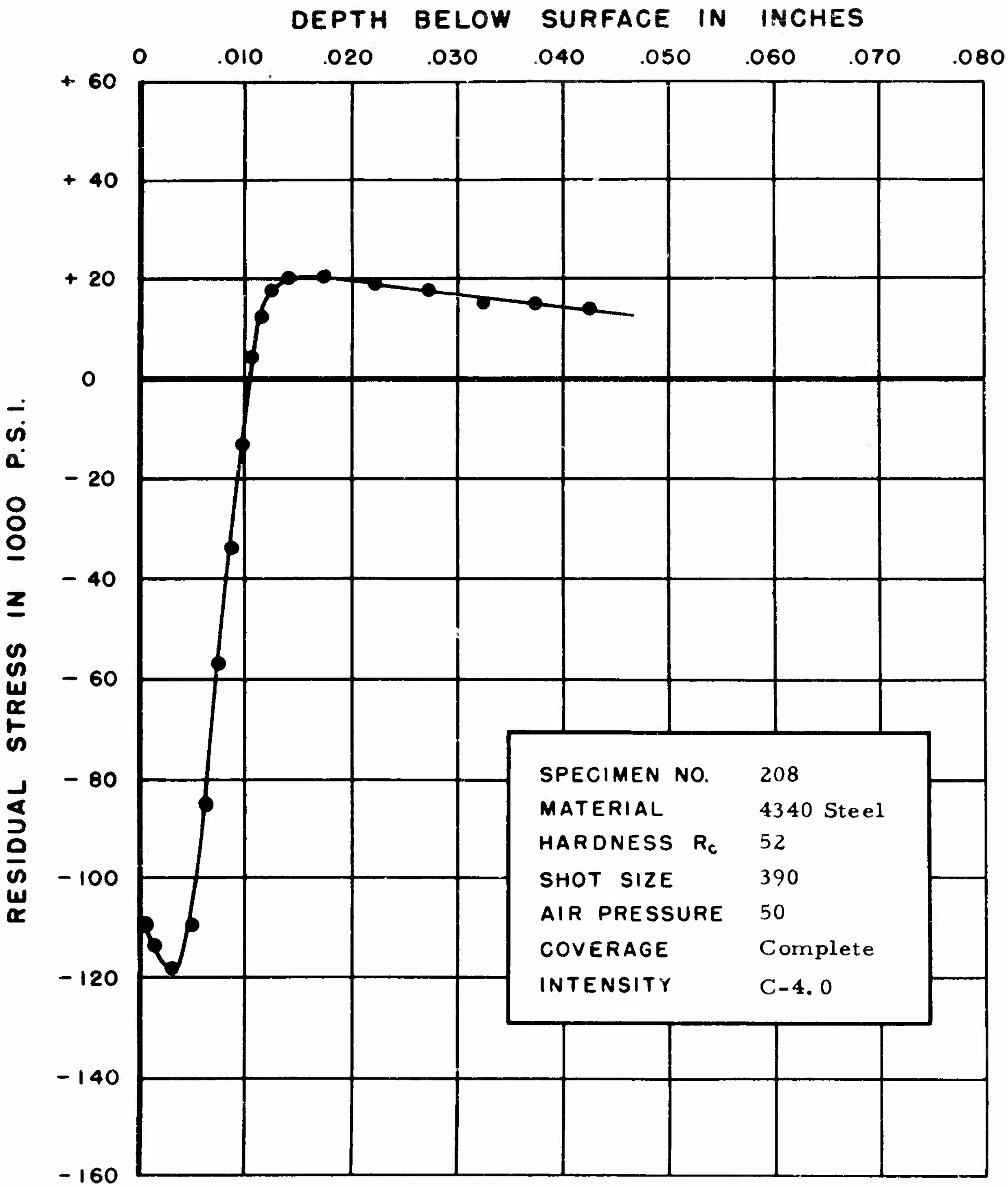

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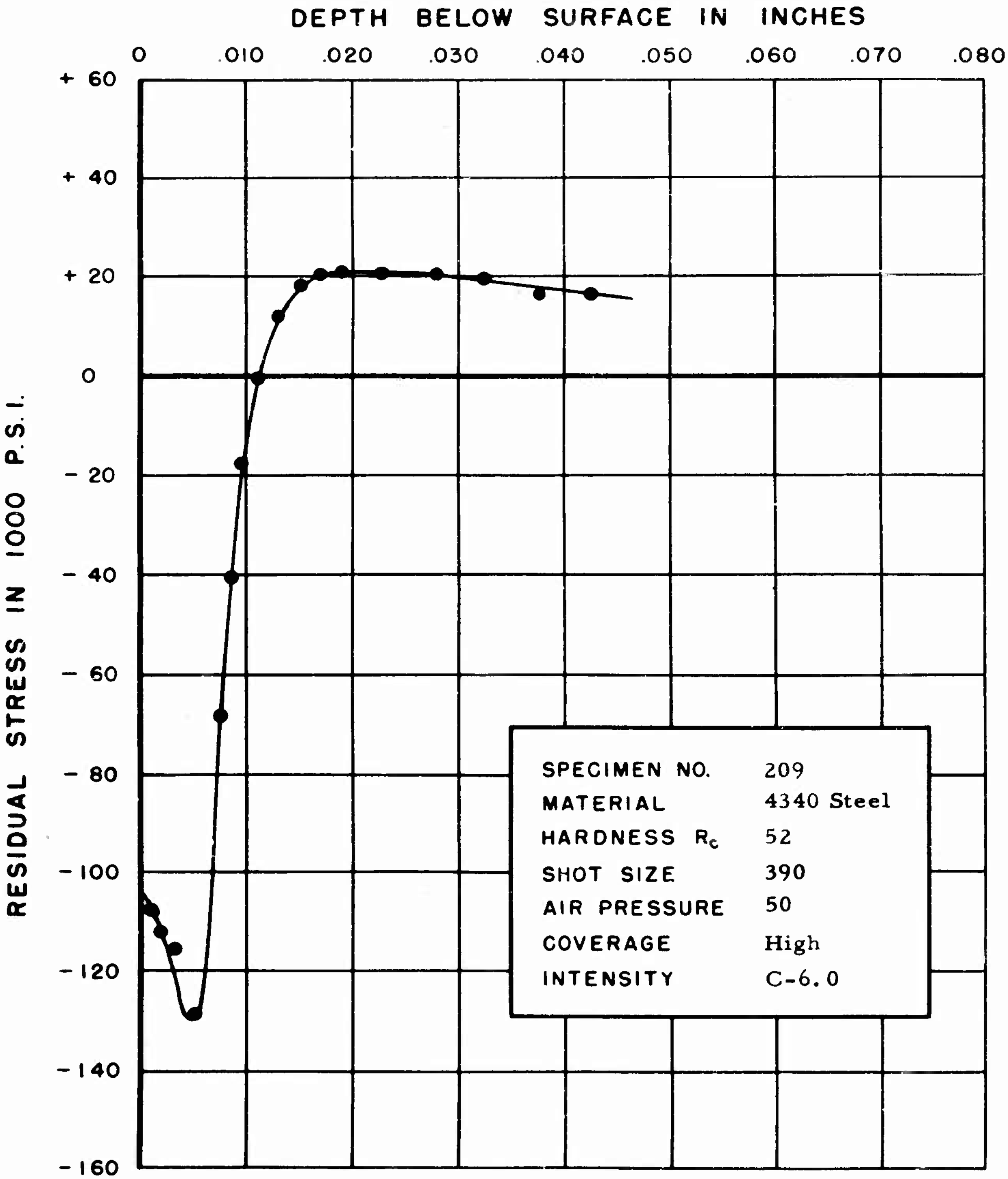

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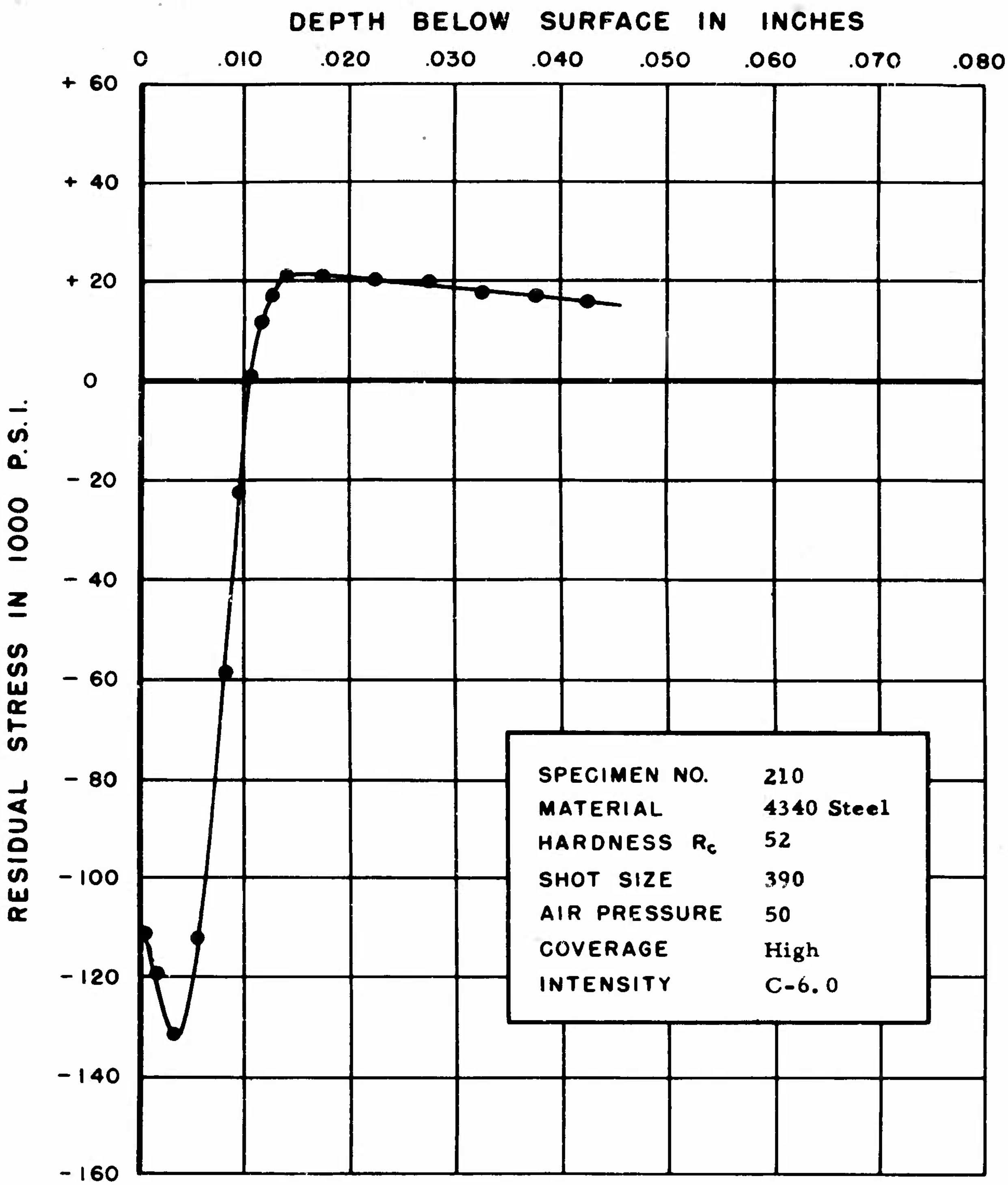


FIGURE 243. RESIDUAL STRESS DISTRIBUTION

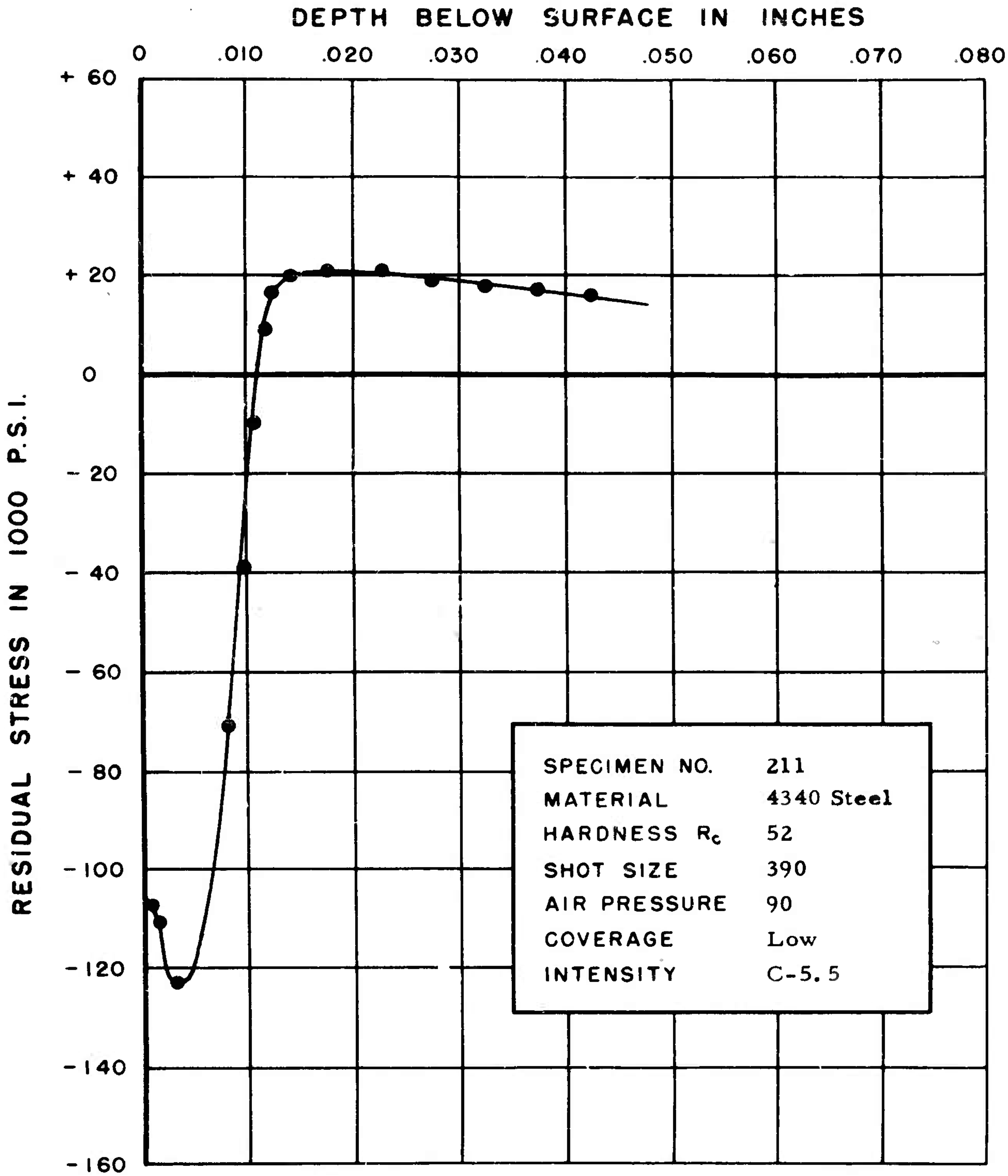
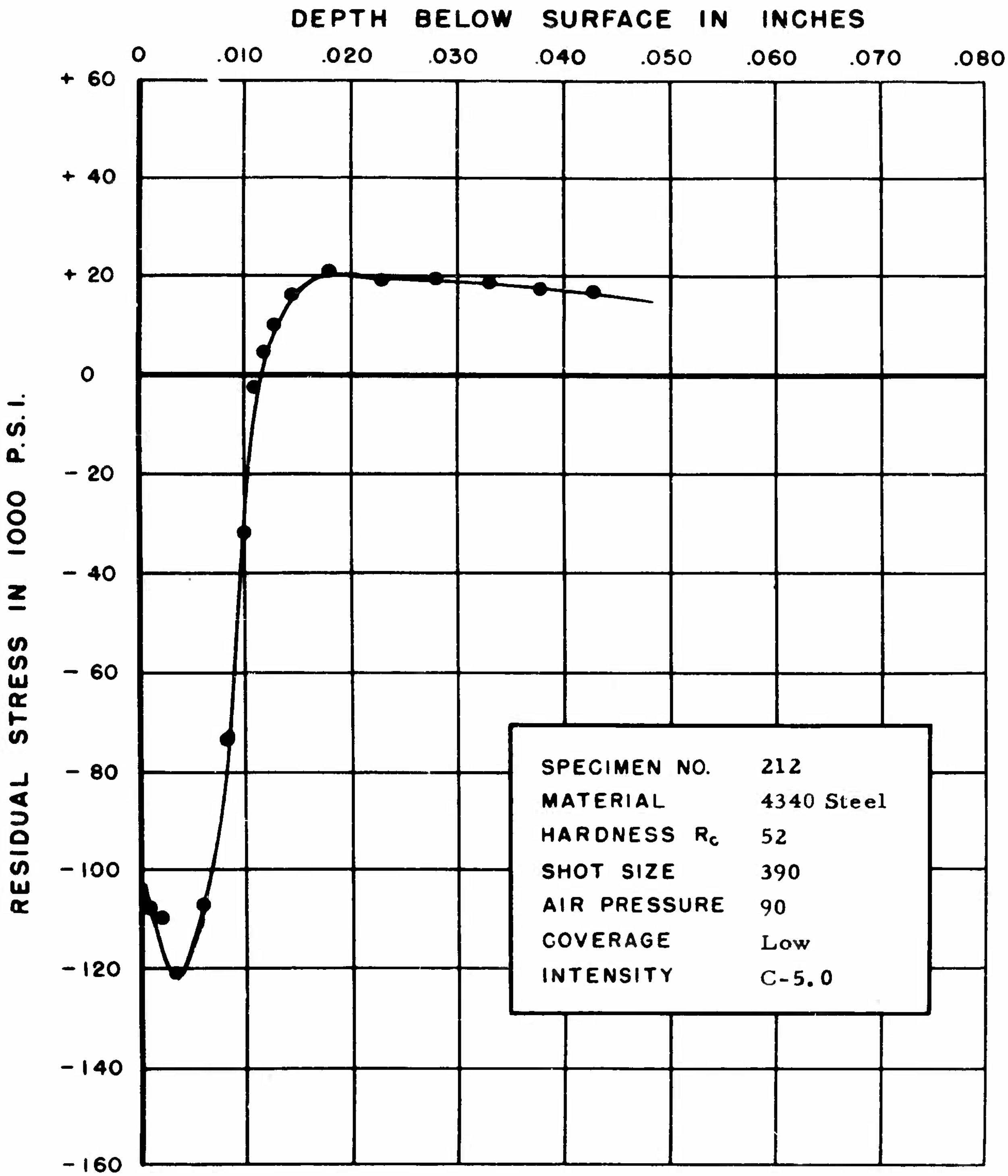


FIGURE 244. RESIDUAL STRESS DISTRIBUTION



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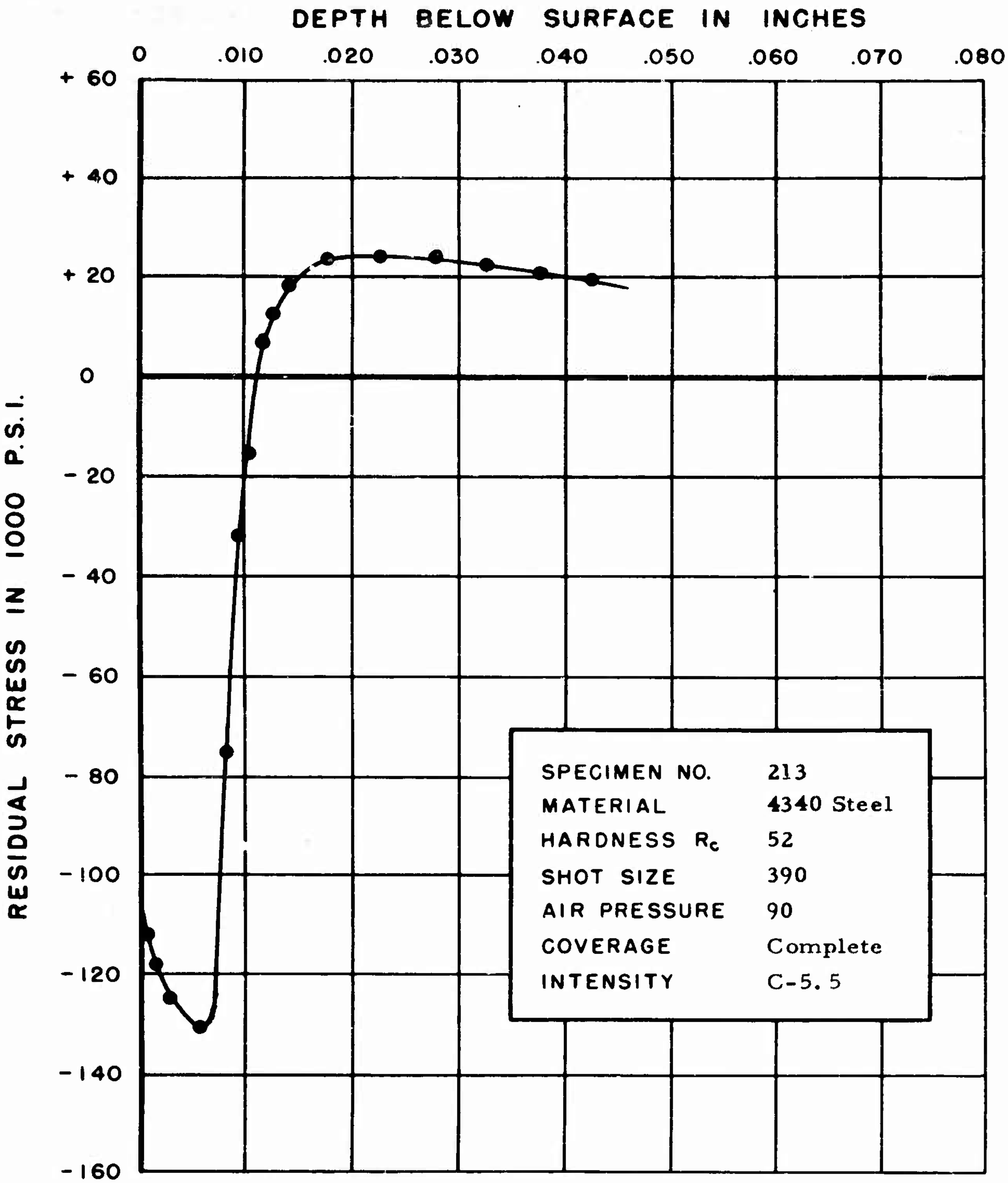

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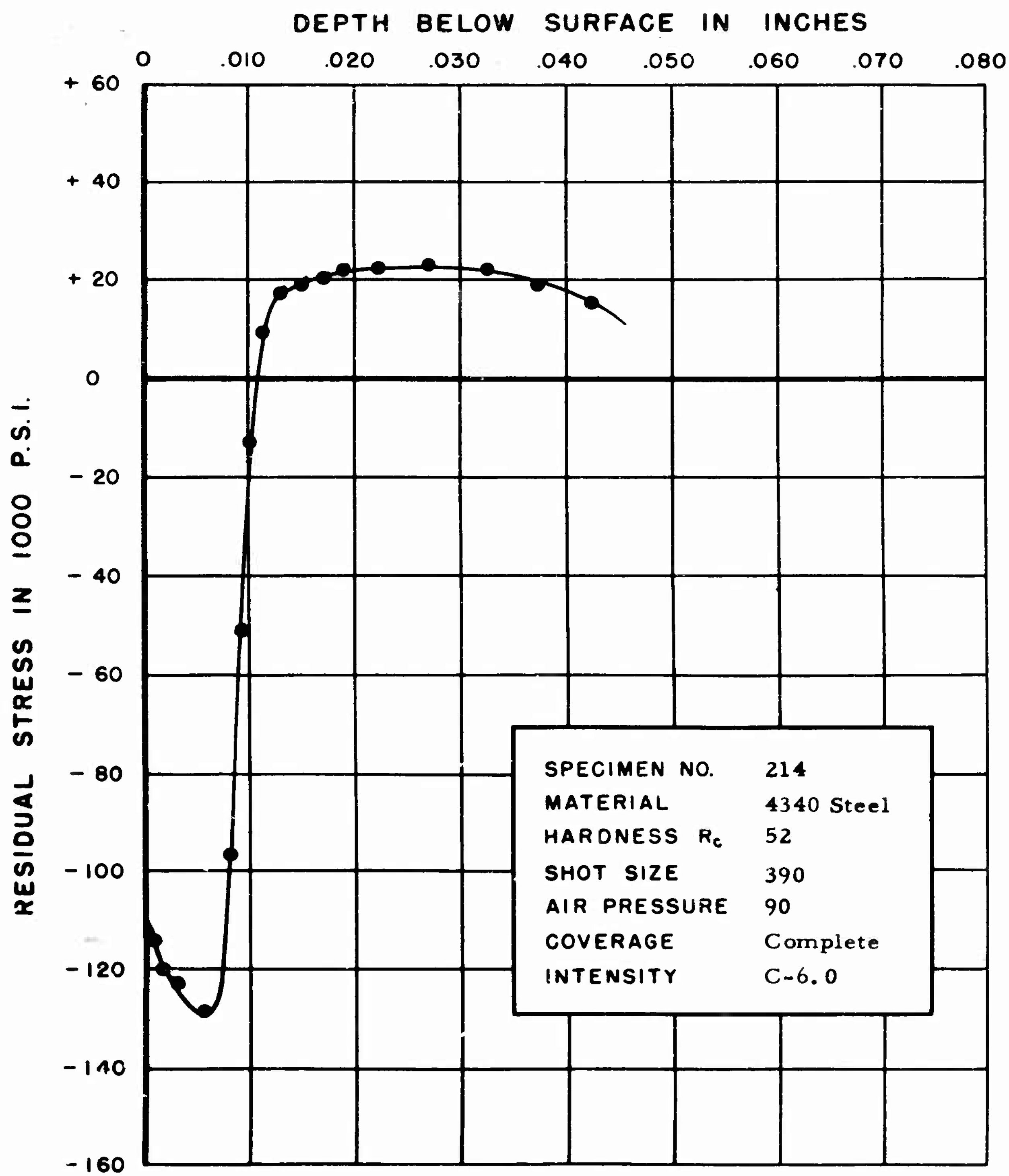

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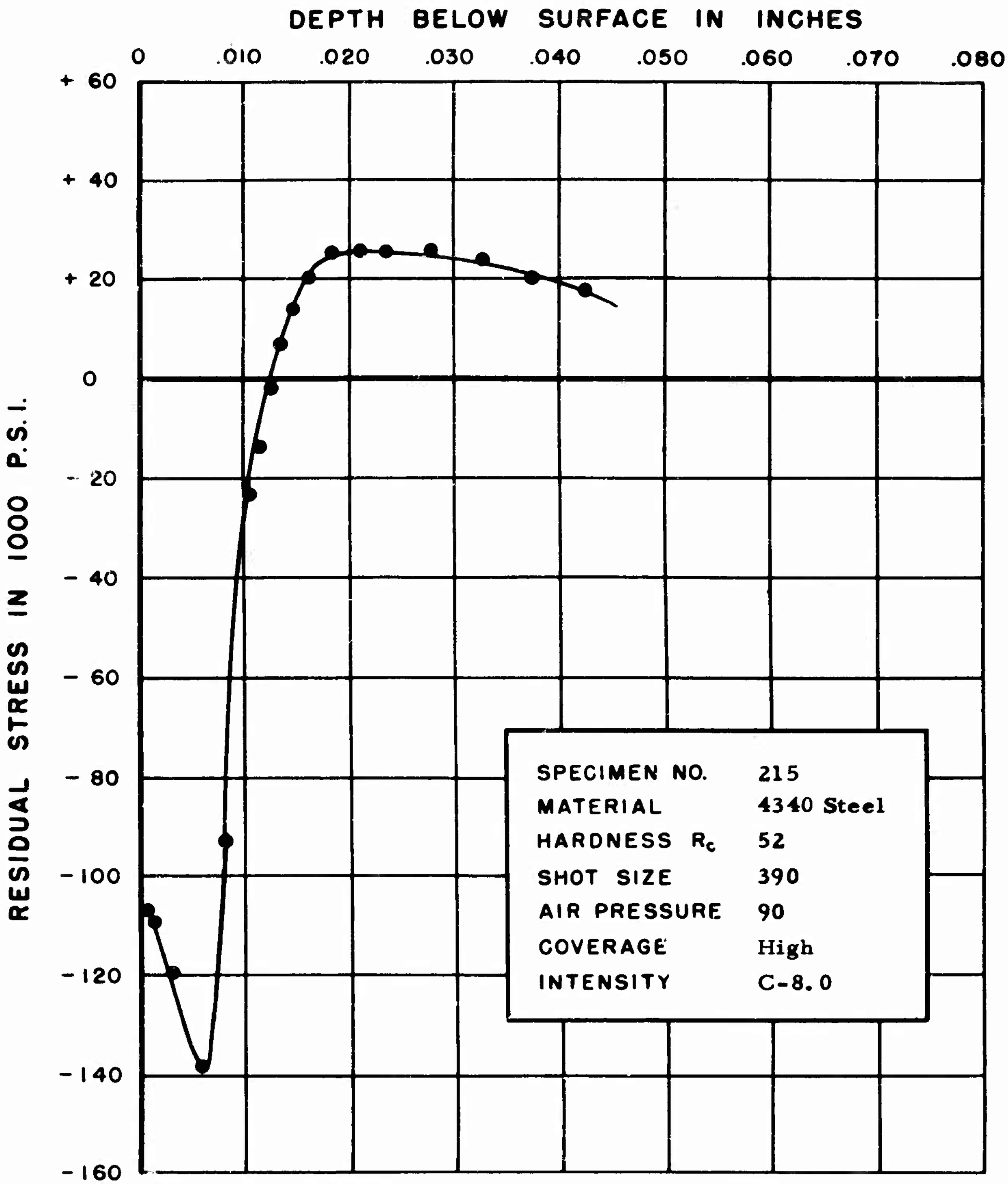

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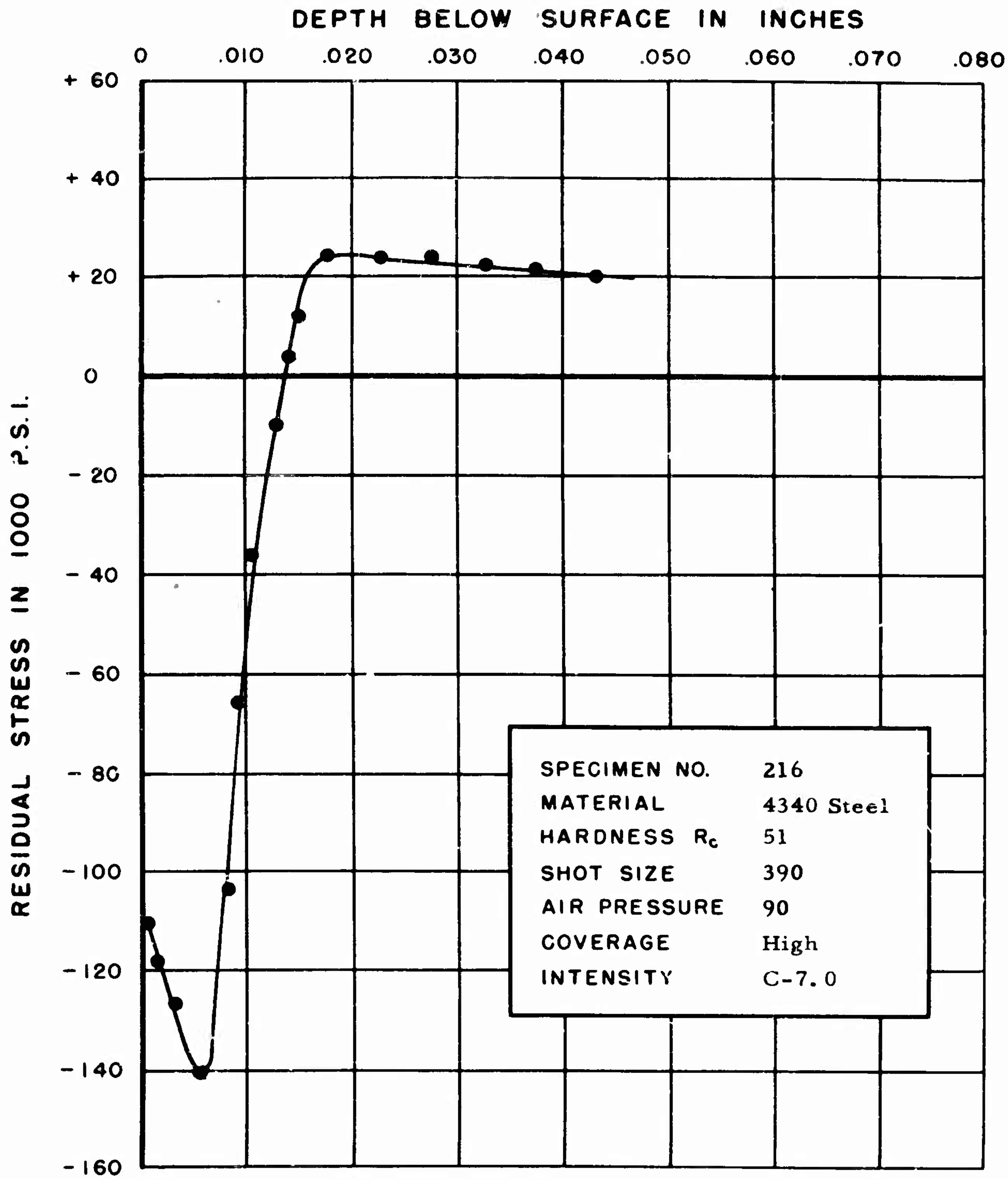

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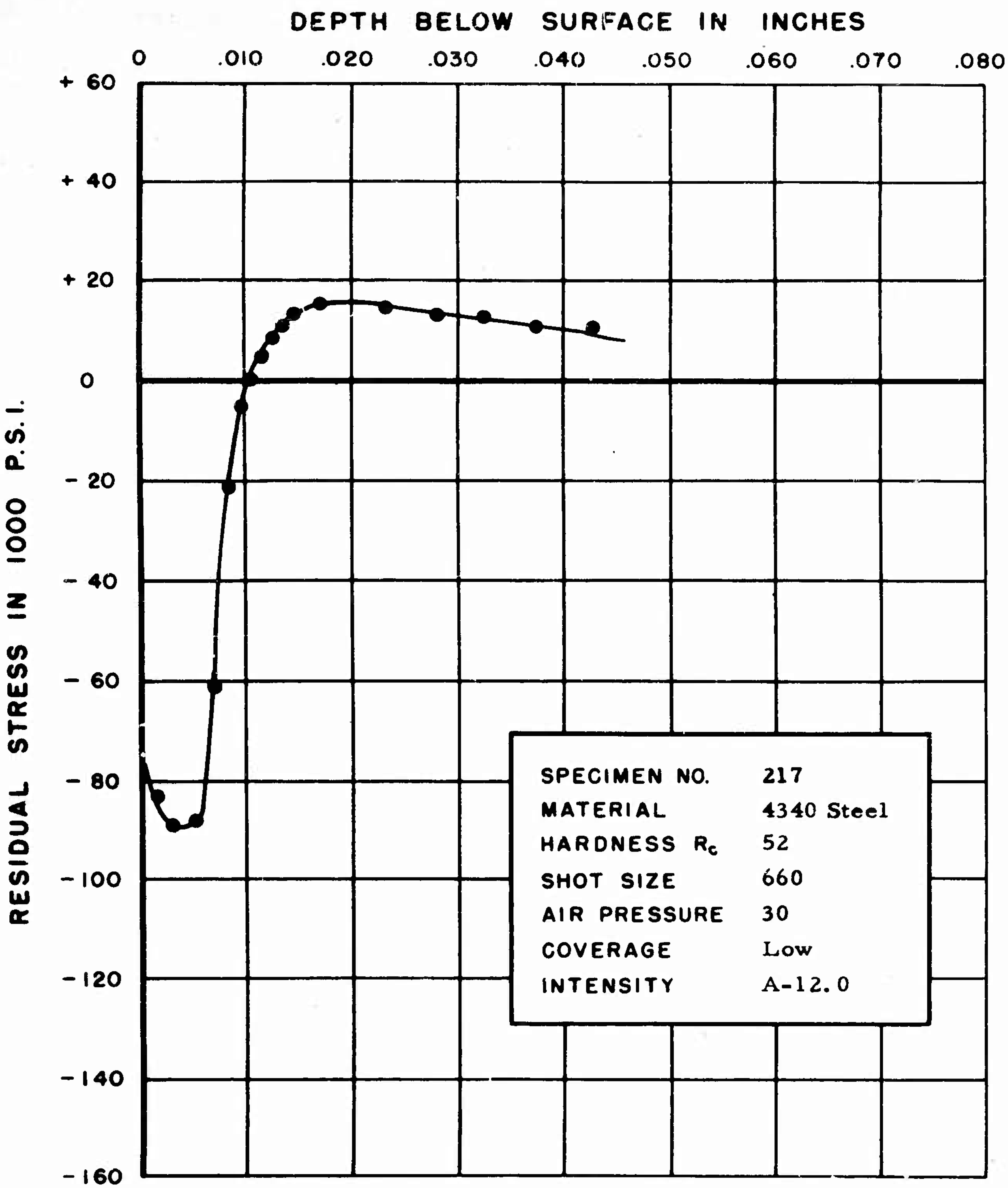

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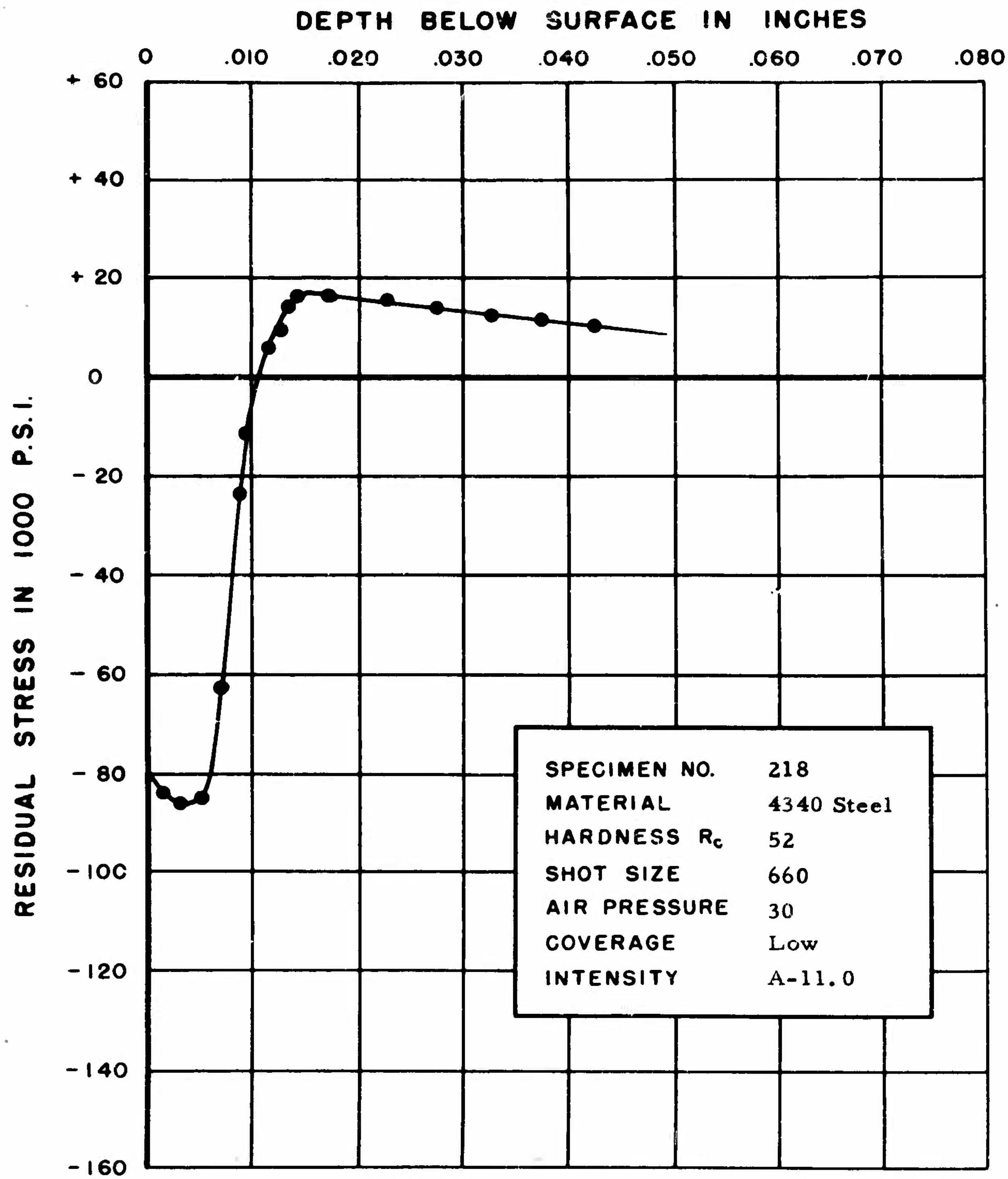

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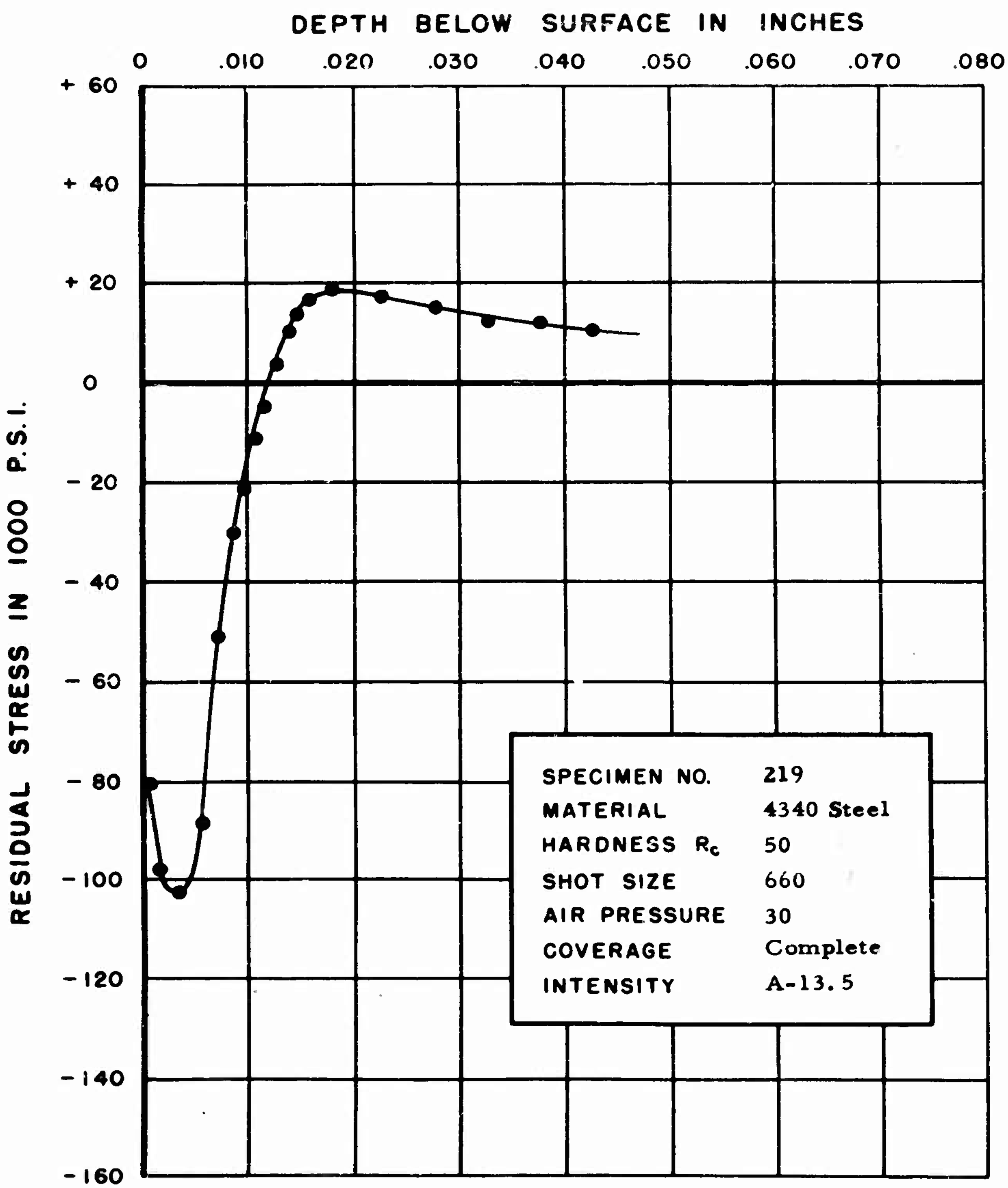

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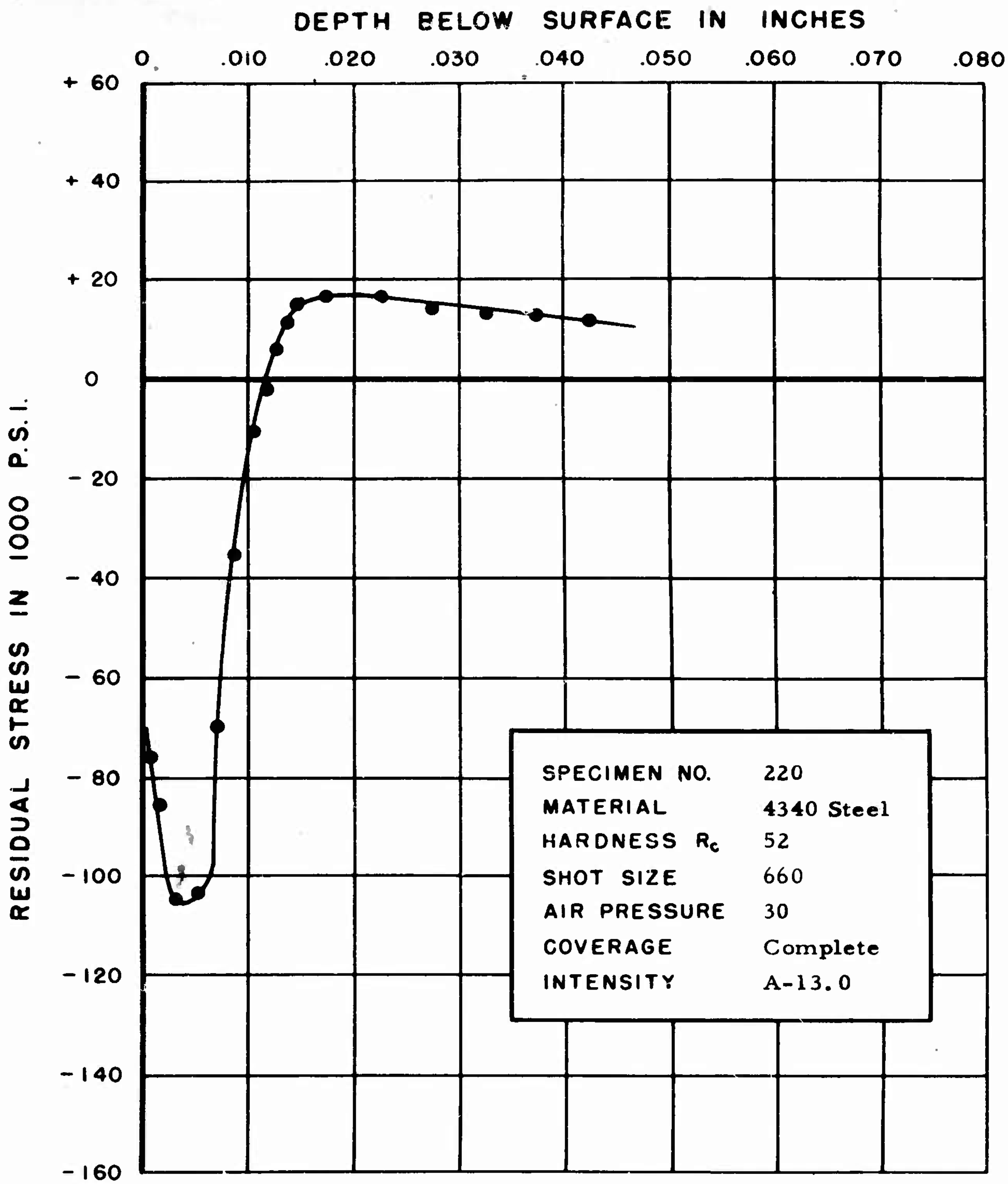

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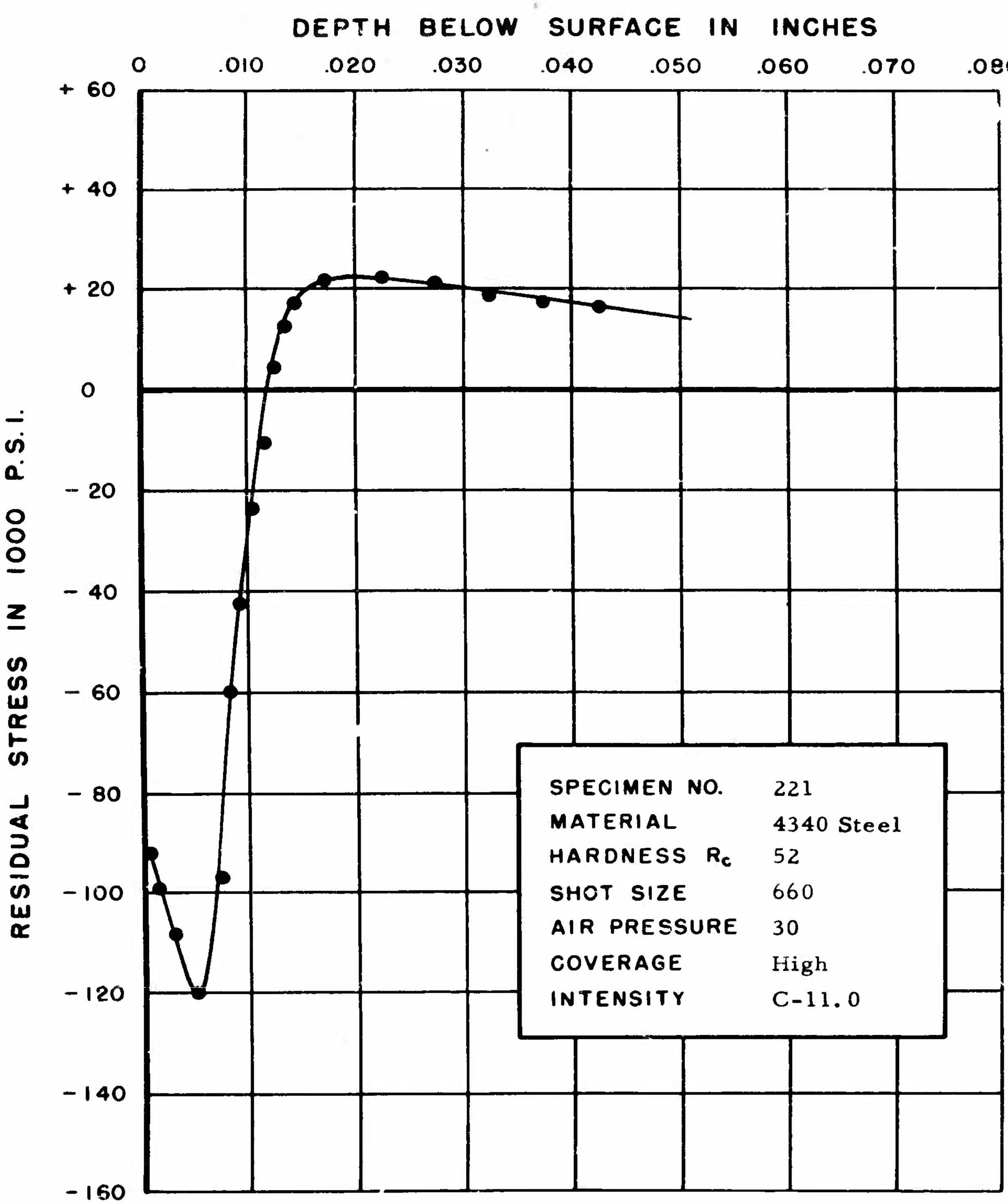

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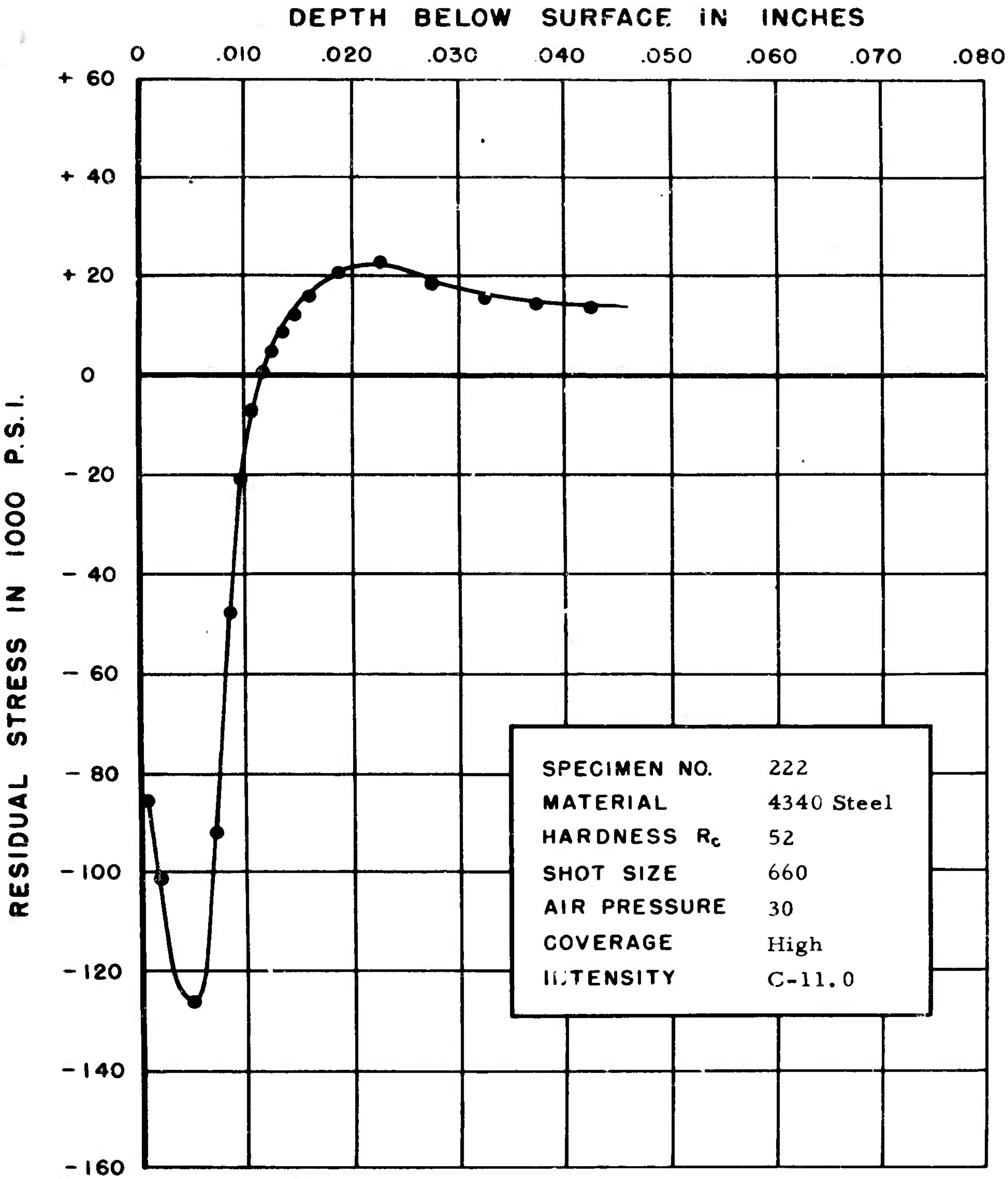

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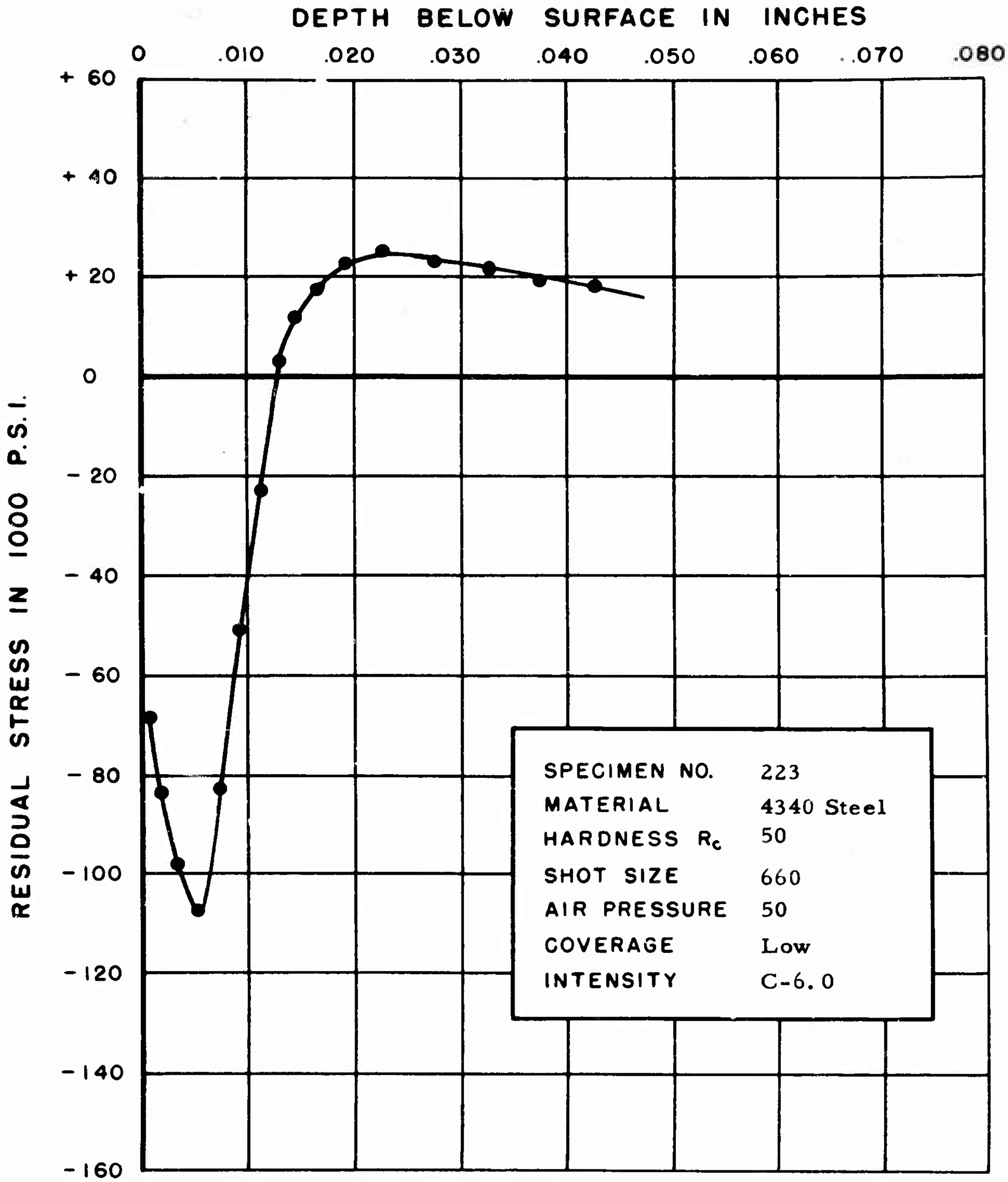

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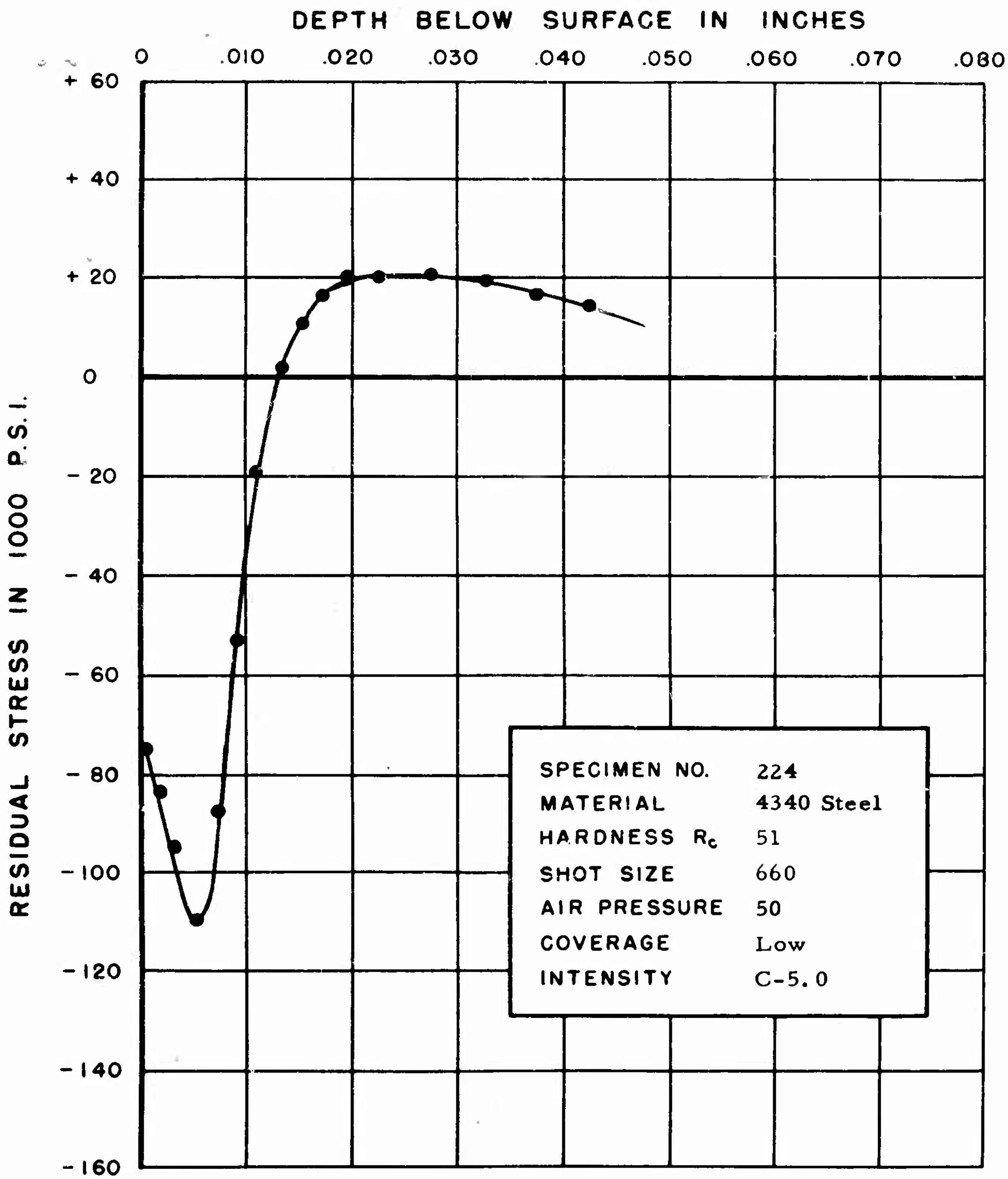

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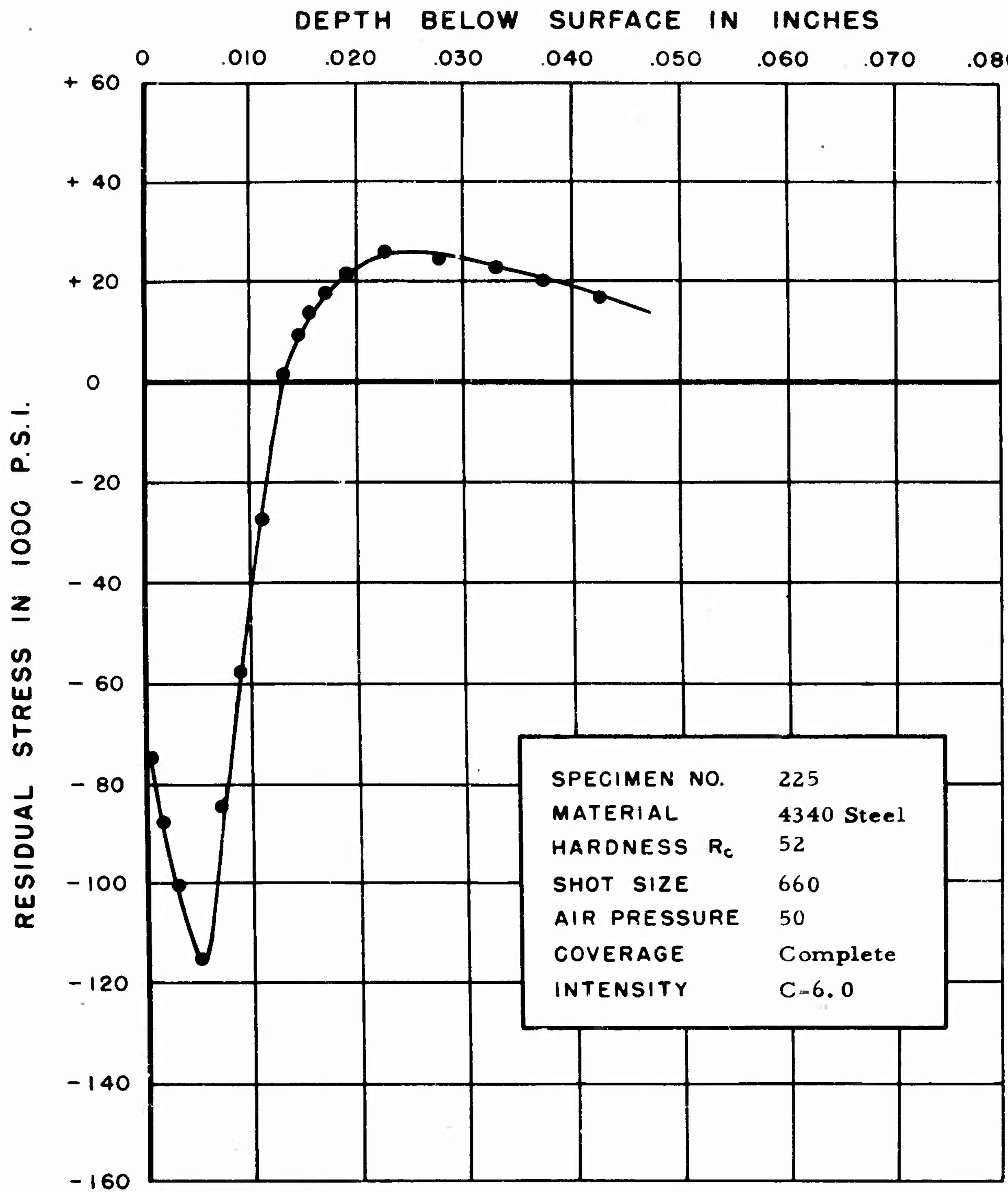

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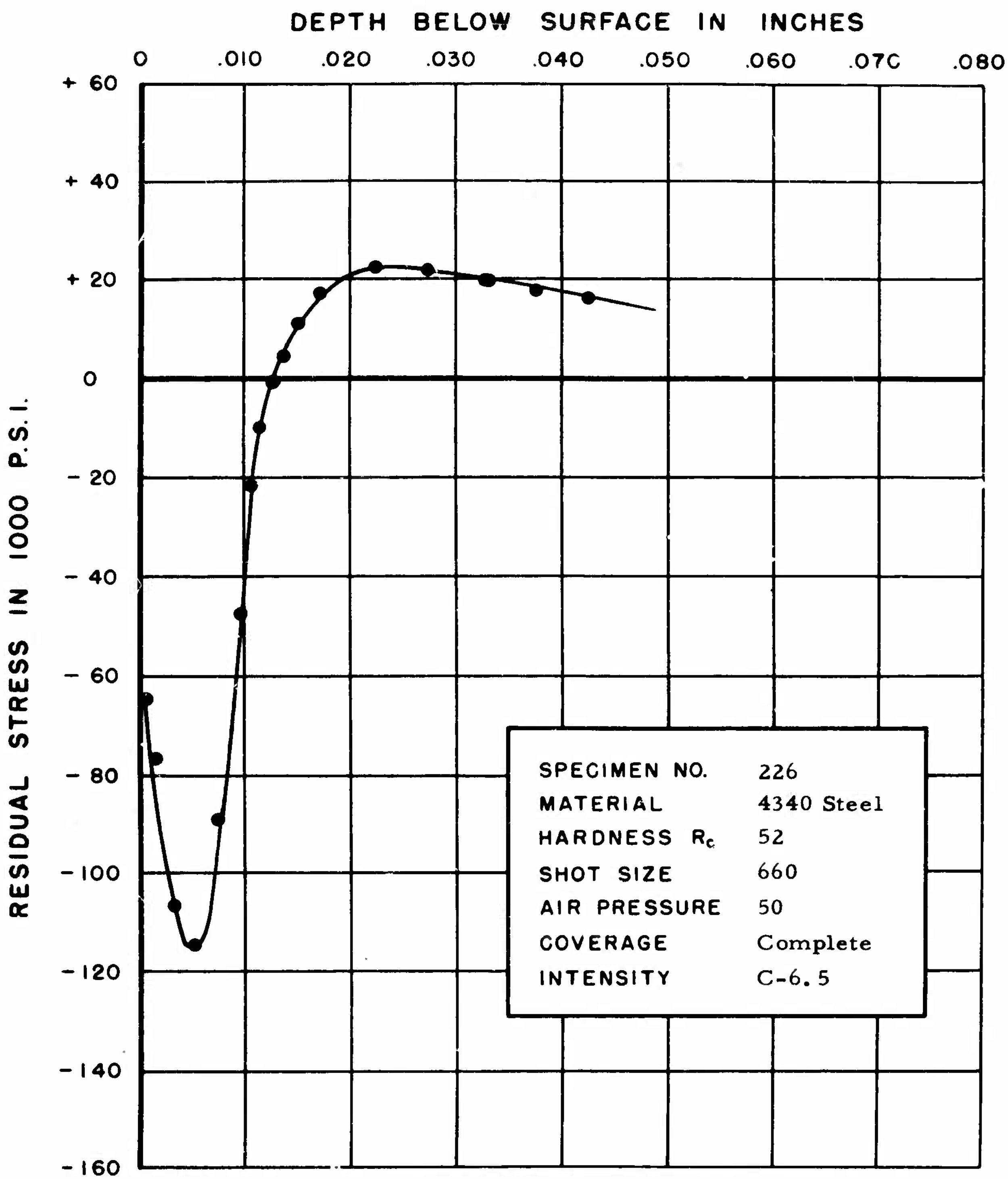

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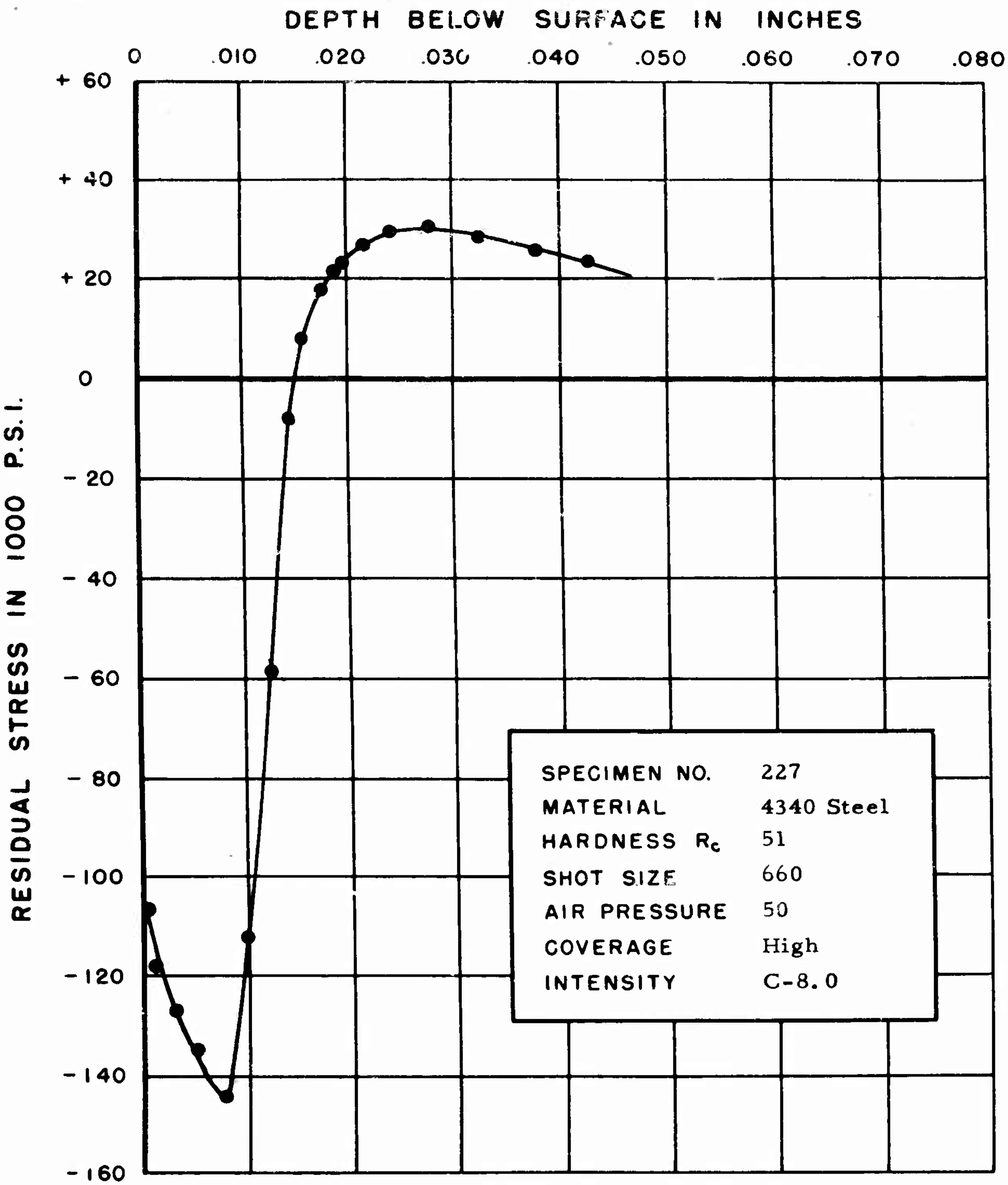
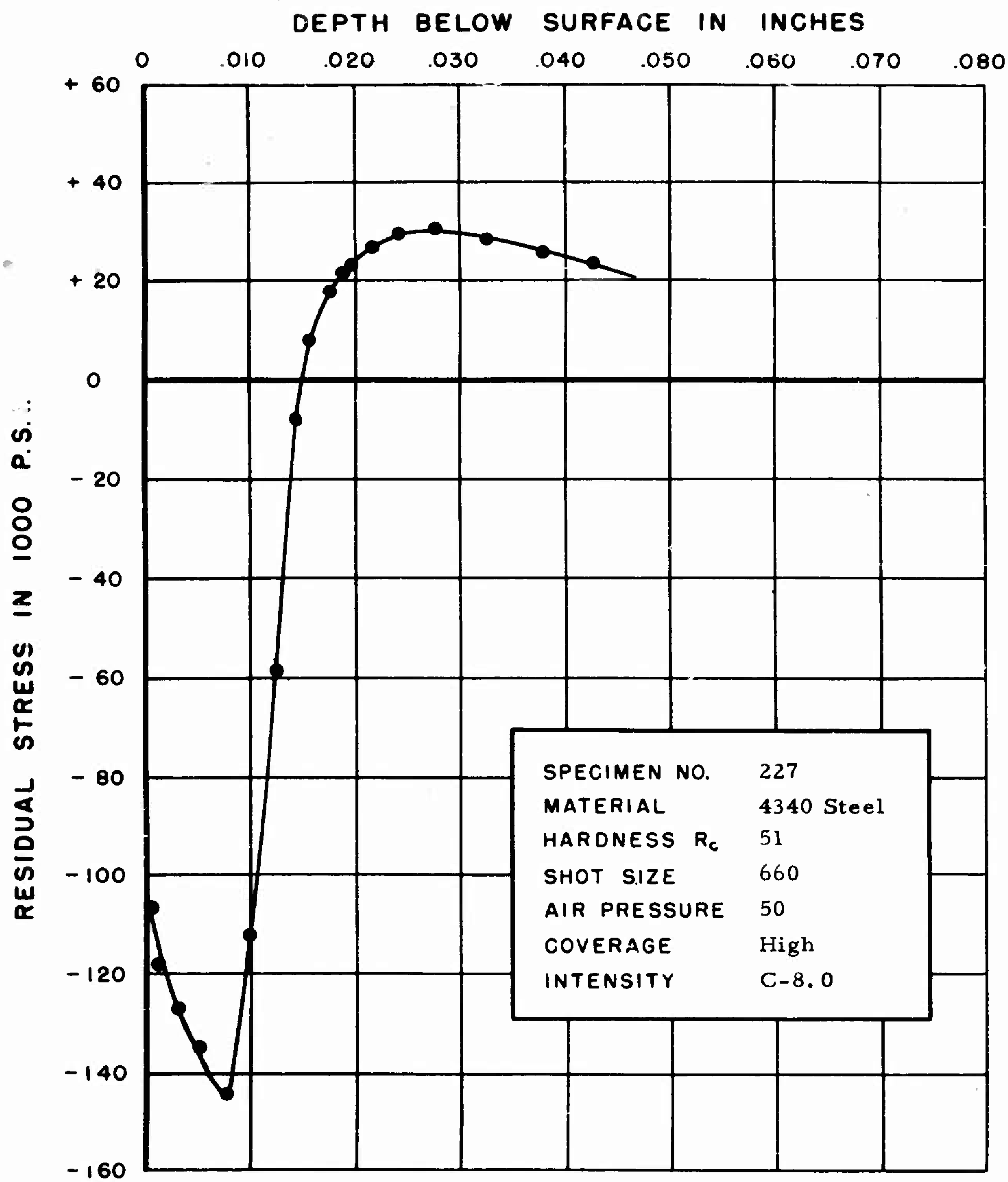


FIGURE 260. RESIDUAL STRESS DISTR'BUTION



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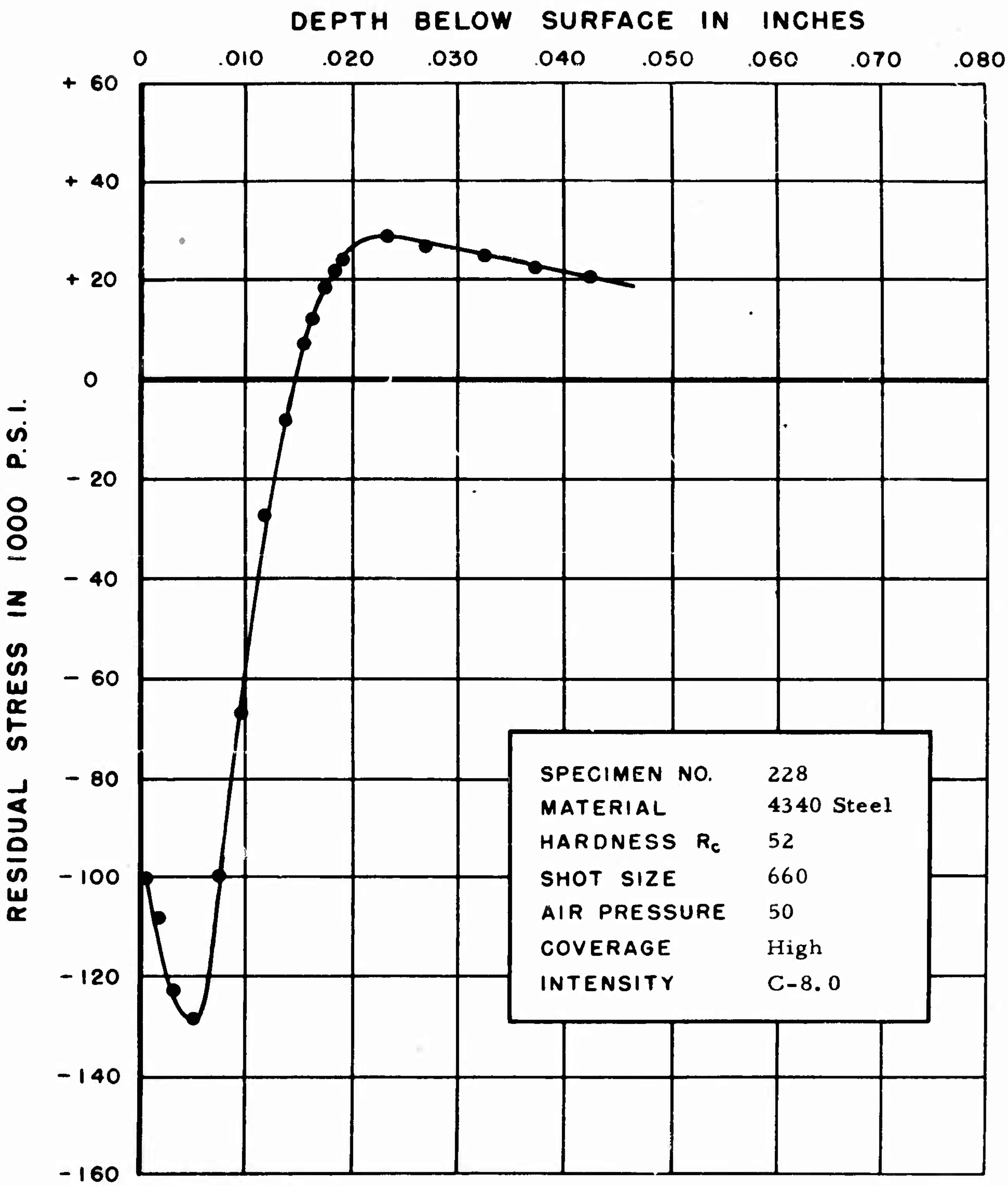

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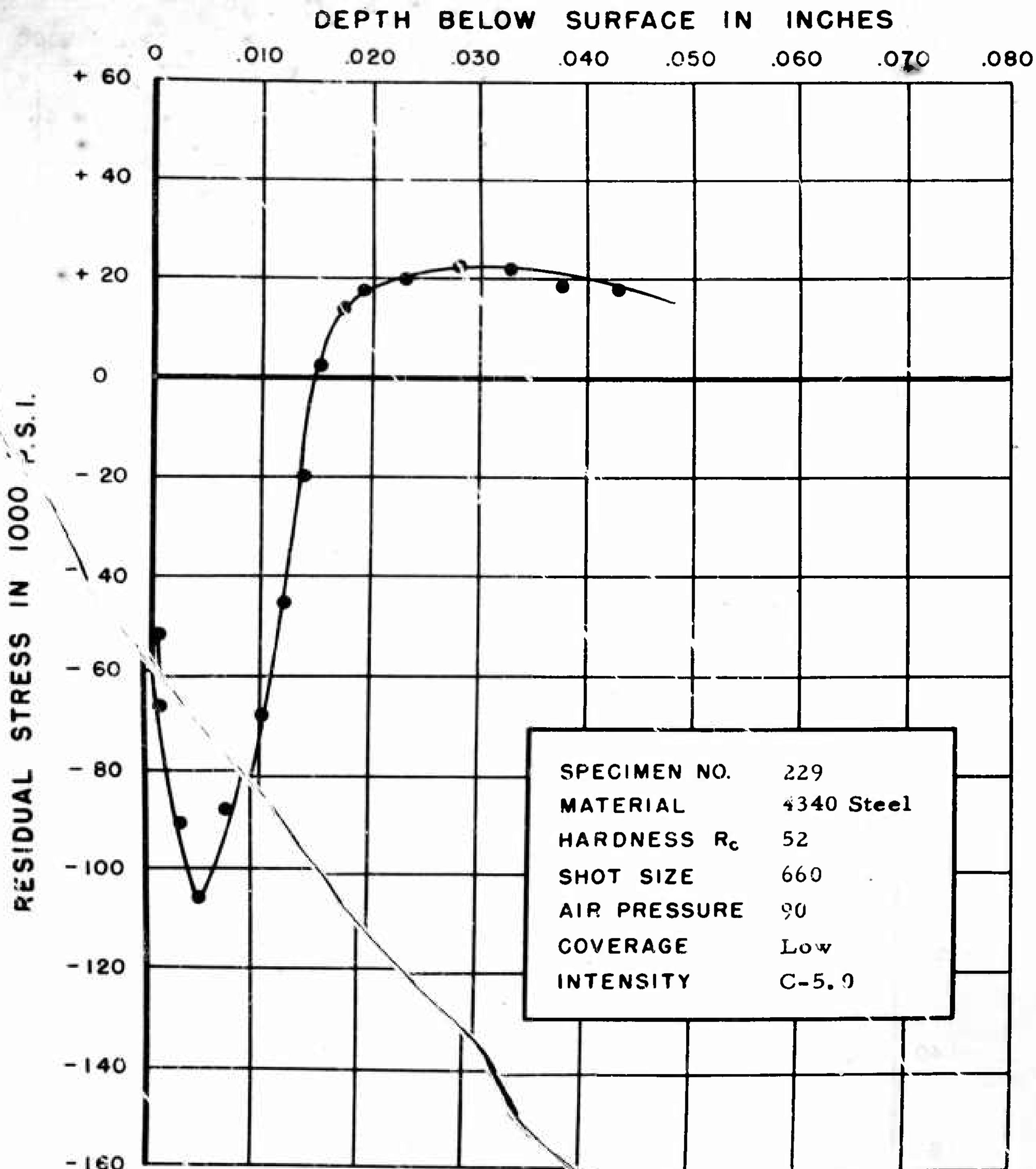

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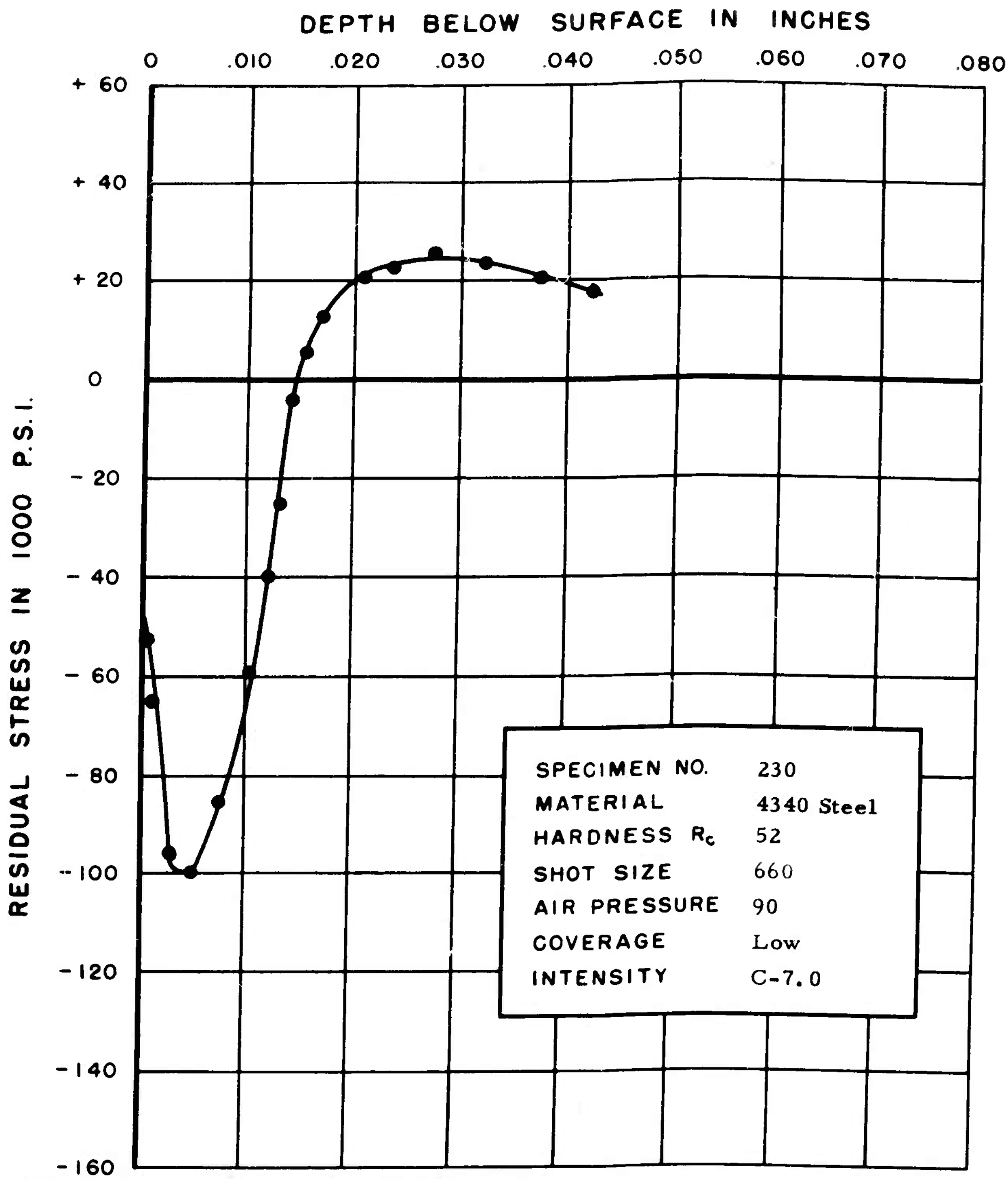

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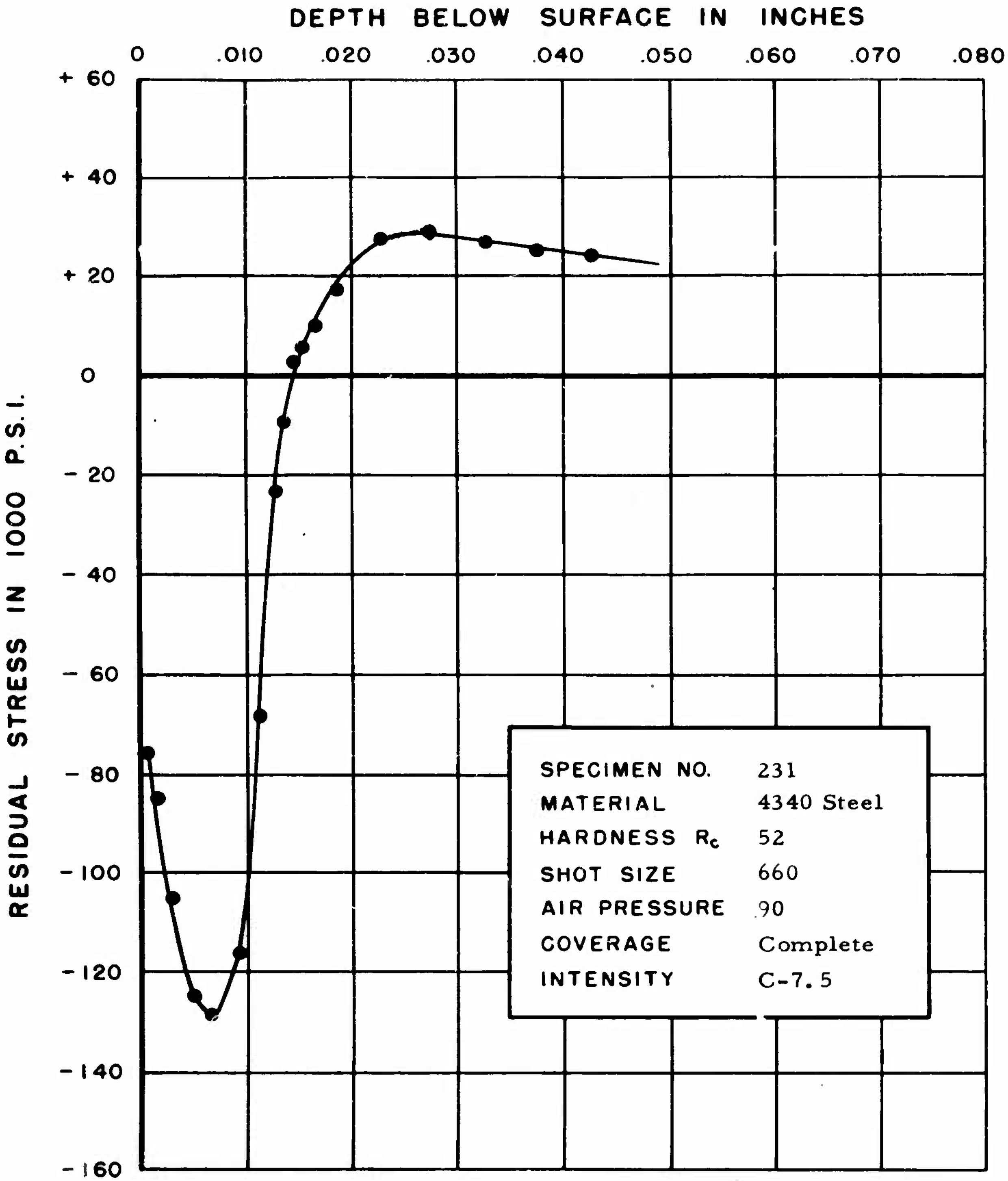

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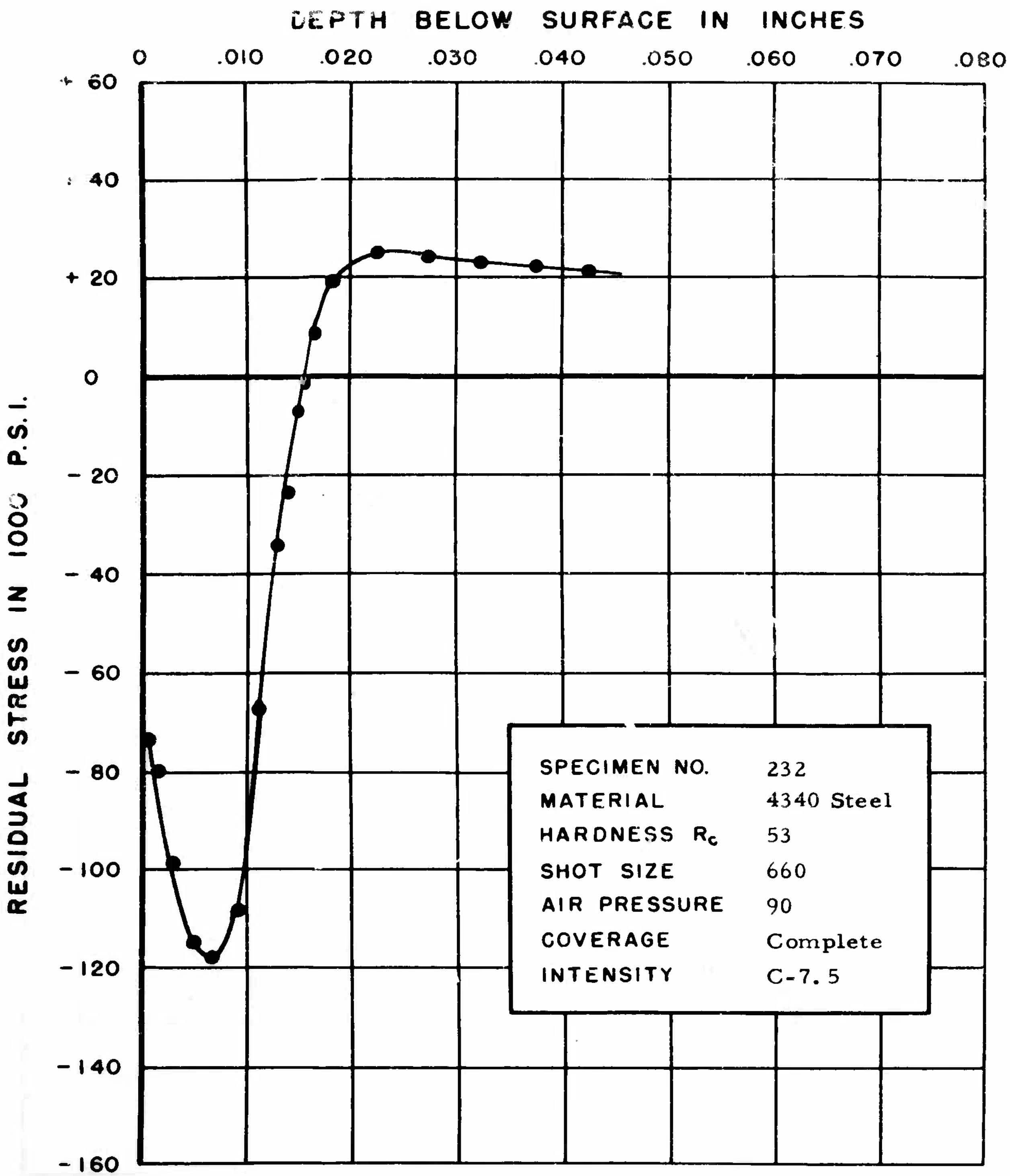

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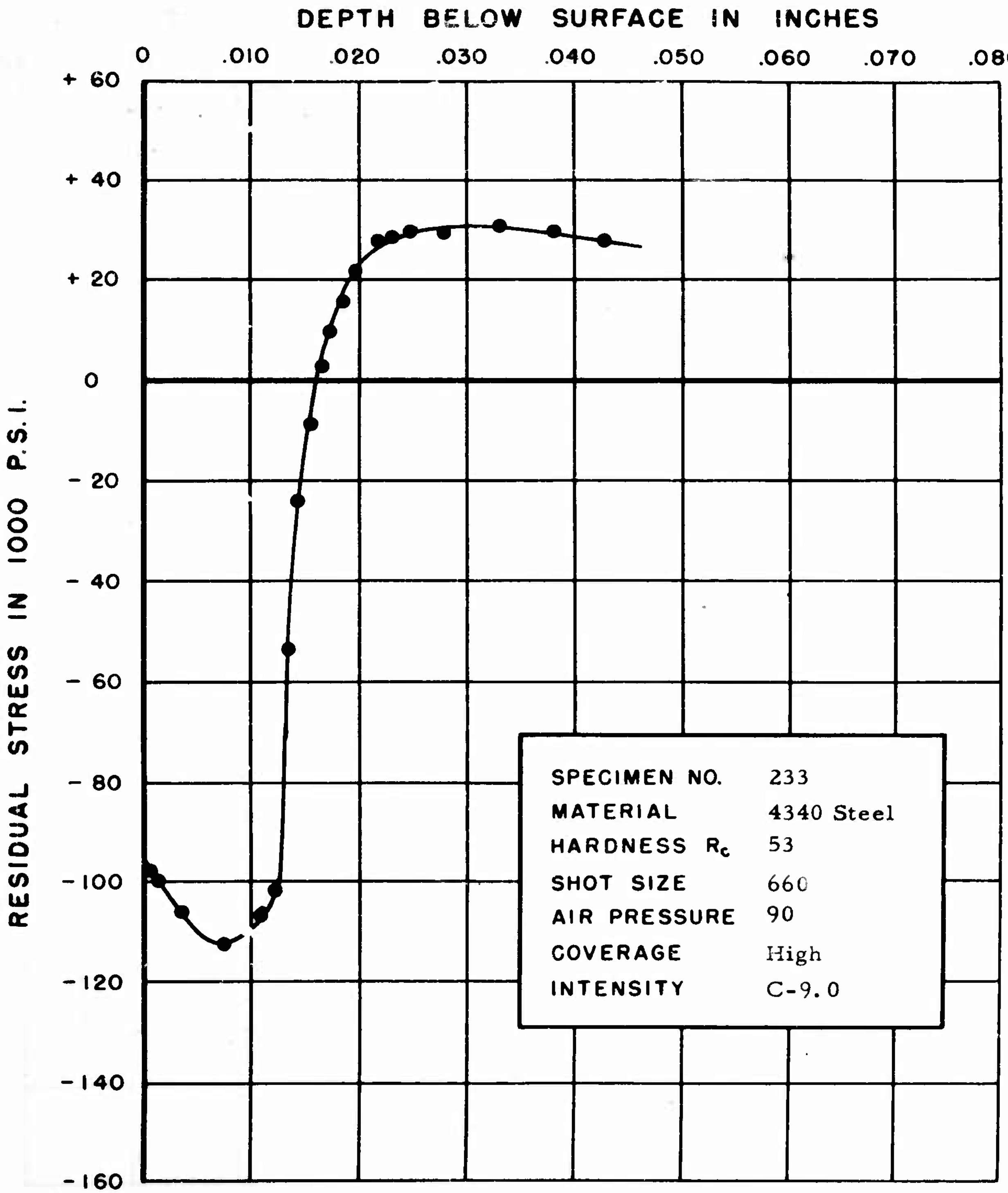


FIGURE 266. RESIDUAL STRESS DISTRIBUTION

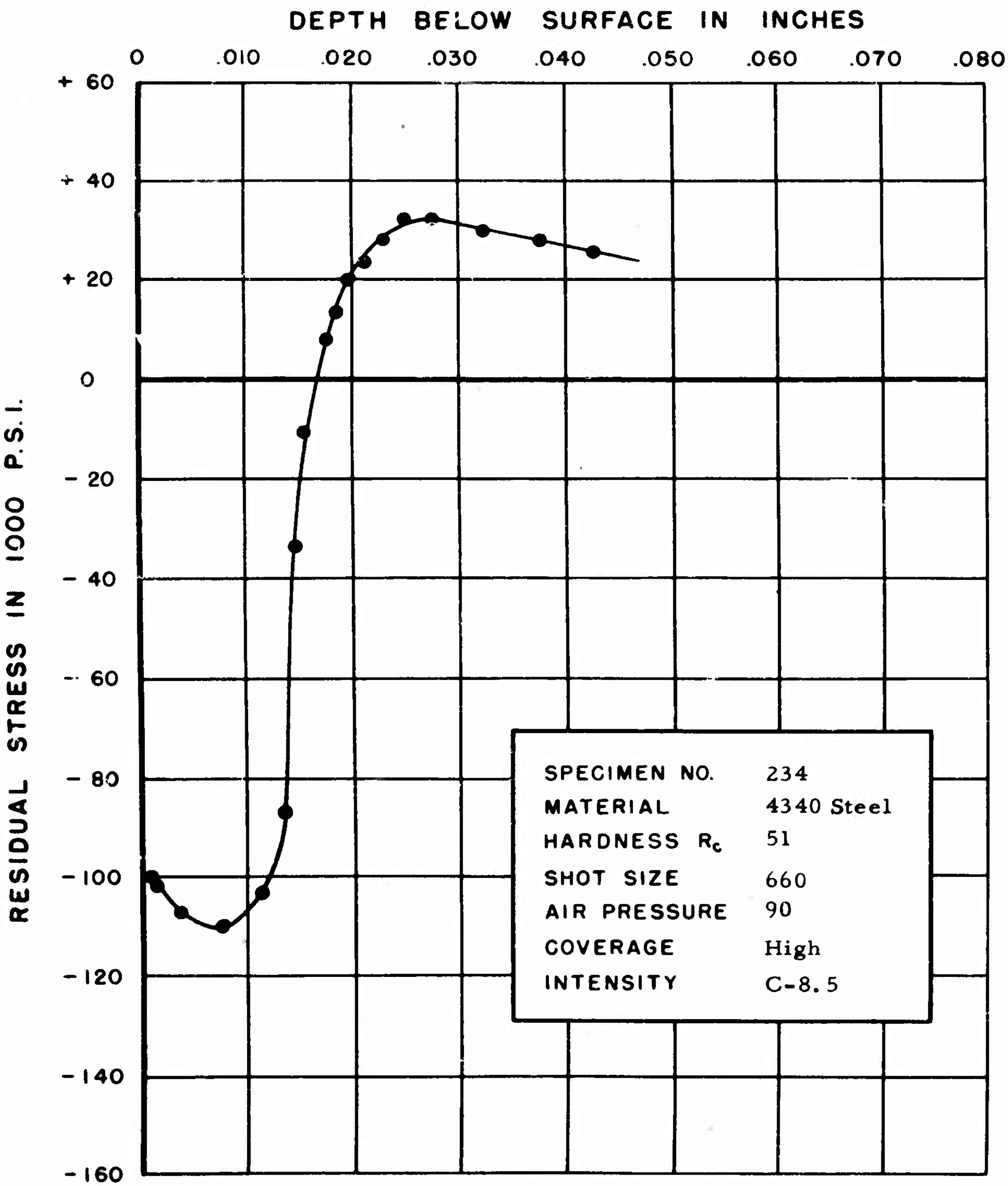


FIGURE 267. RESIDUAL STRESS DISTRIBUTION

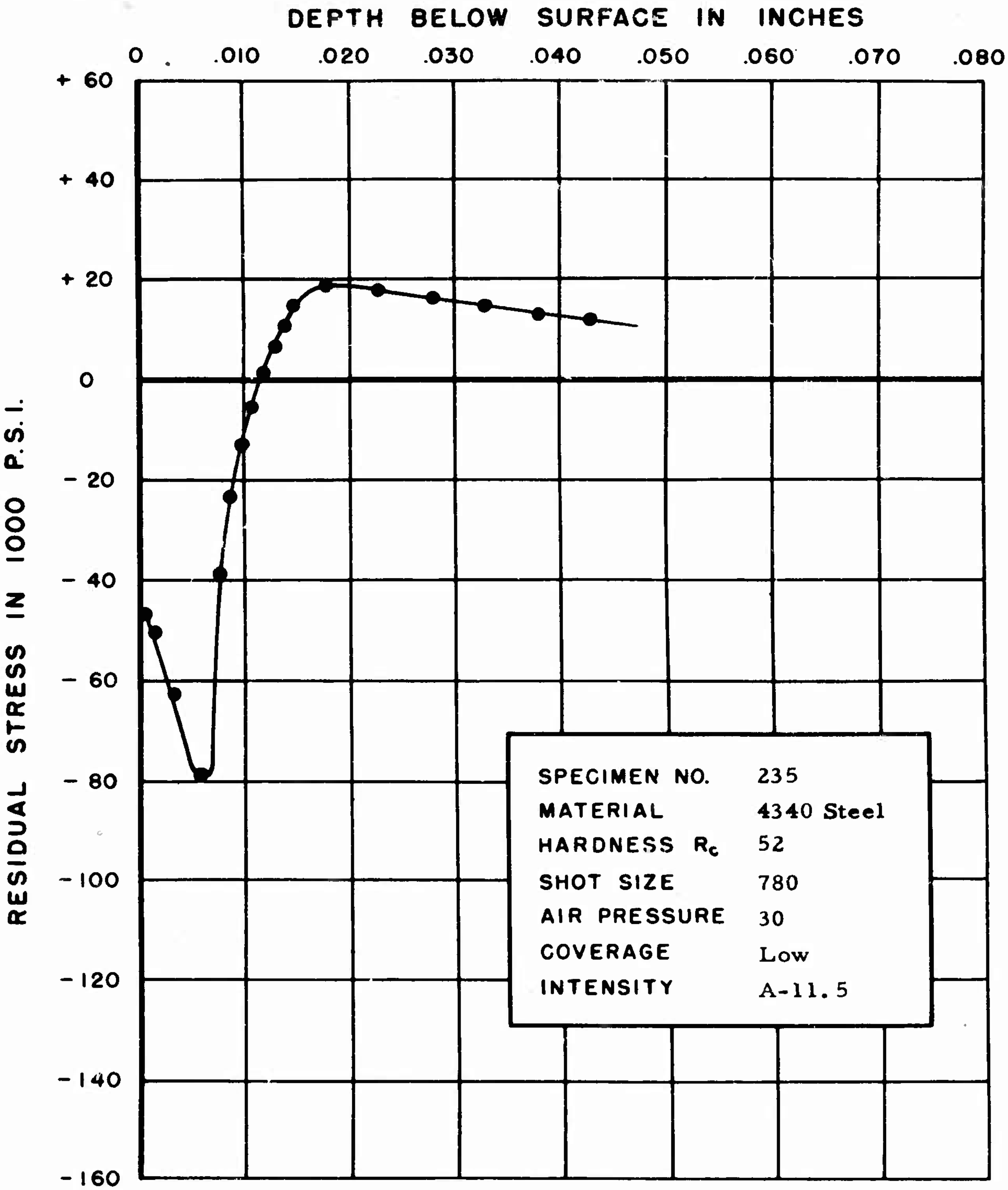


FIGURE 268. RESIDUAL STRESS DISTRIBUTION

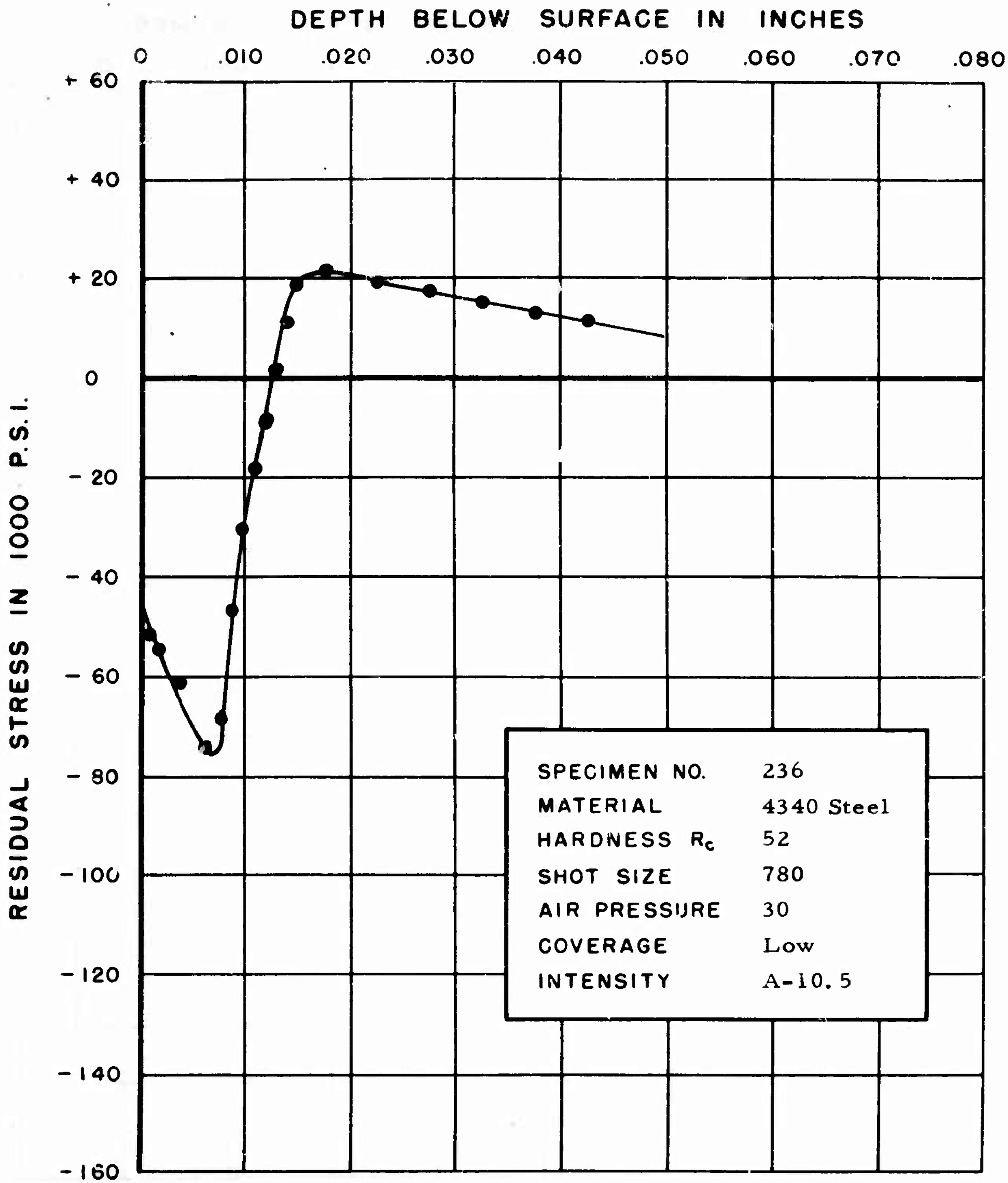


FIGURE 269. RESIDUAL STRESS DISTRIBUTION

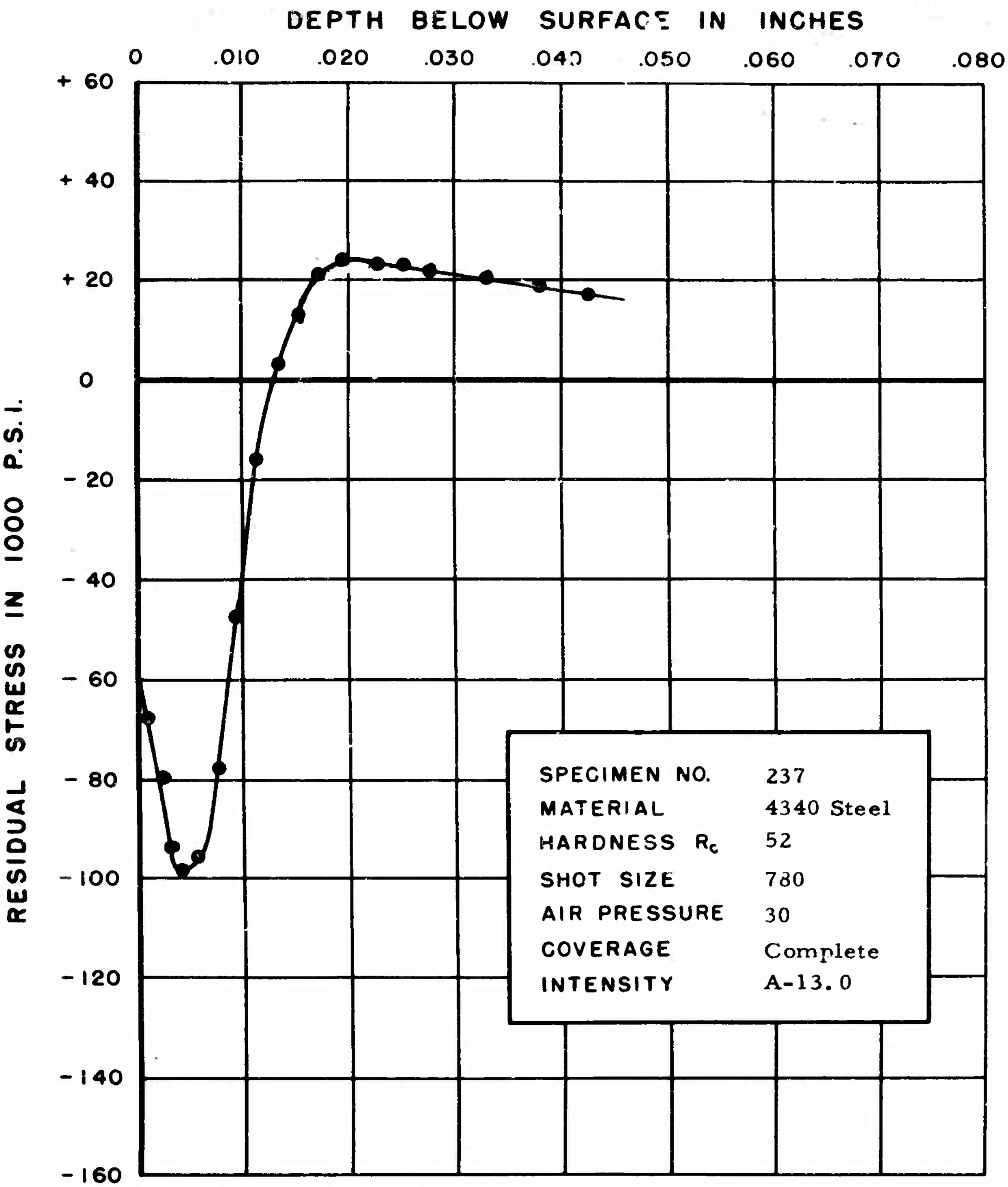
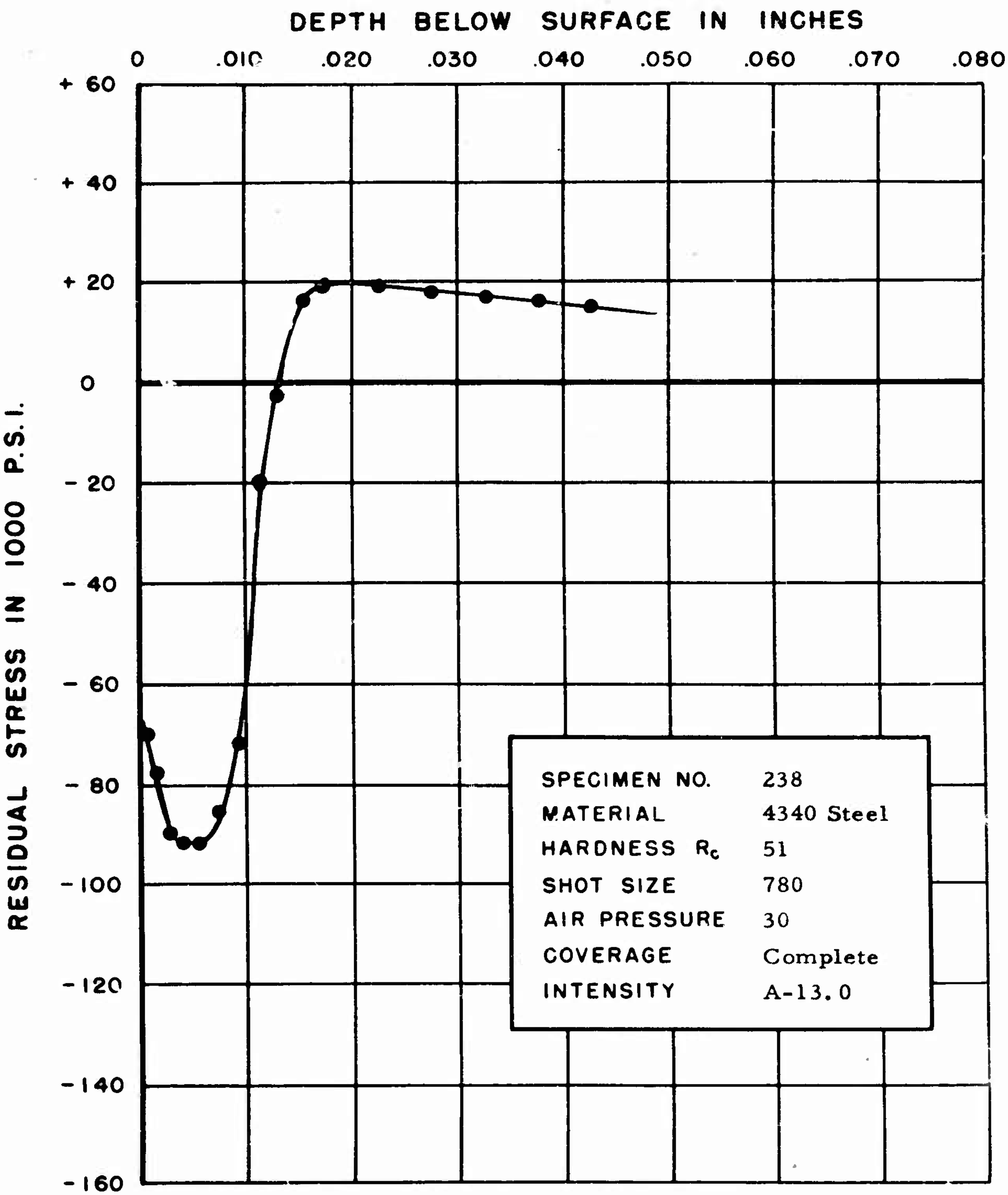


FIGURE 270. RESIDUAL STRESS DISTRIBUTION



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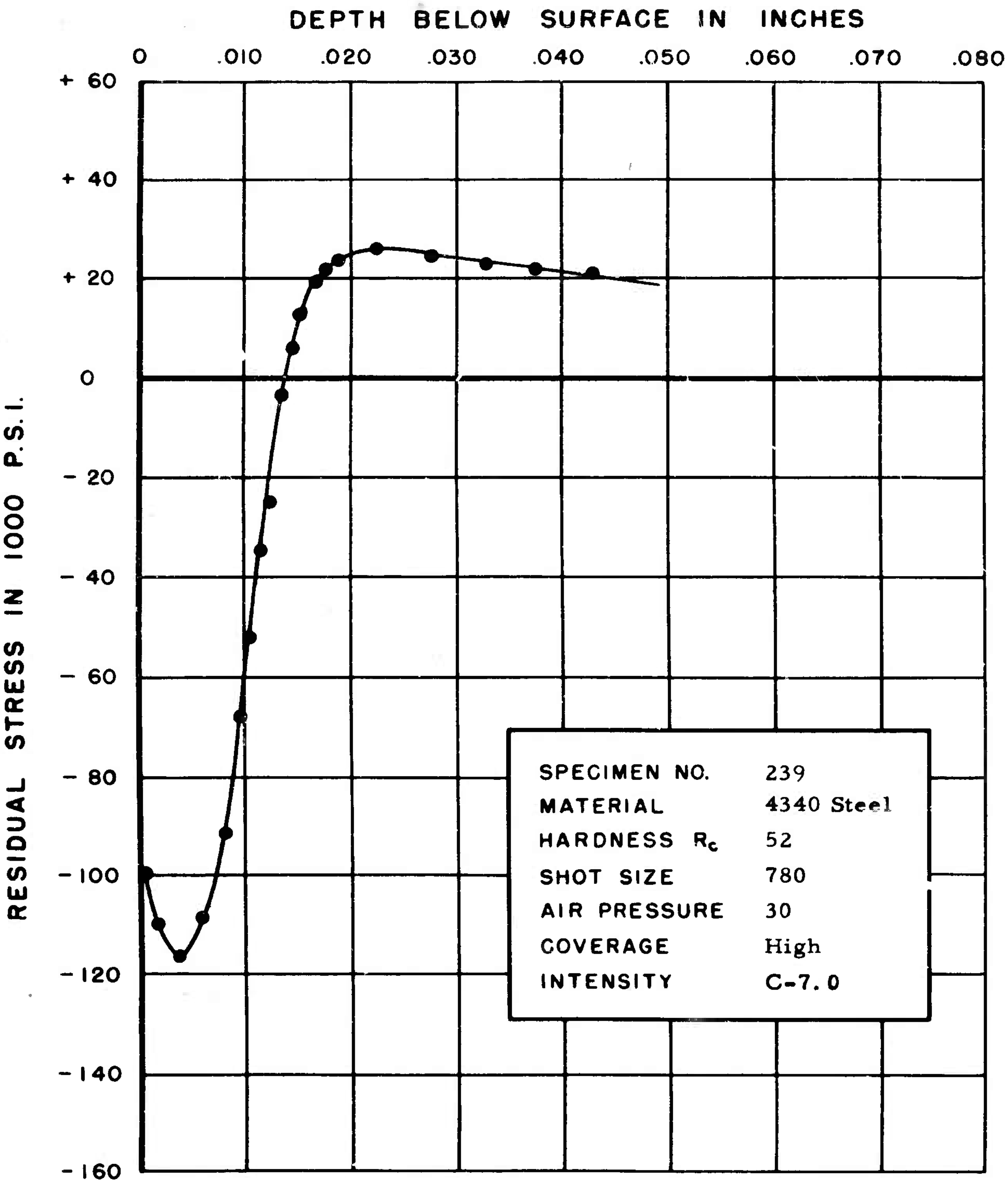

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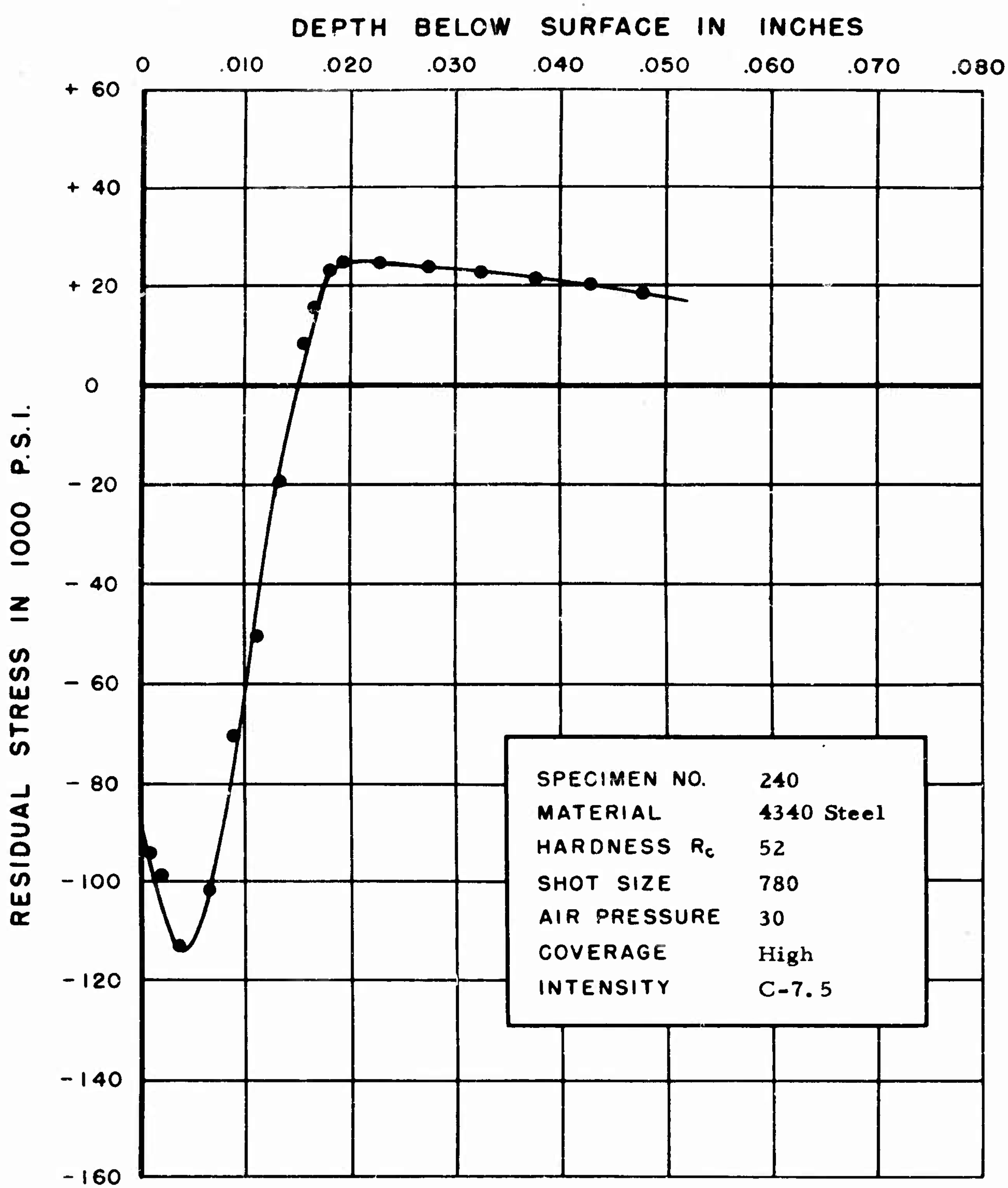

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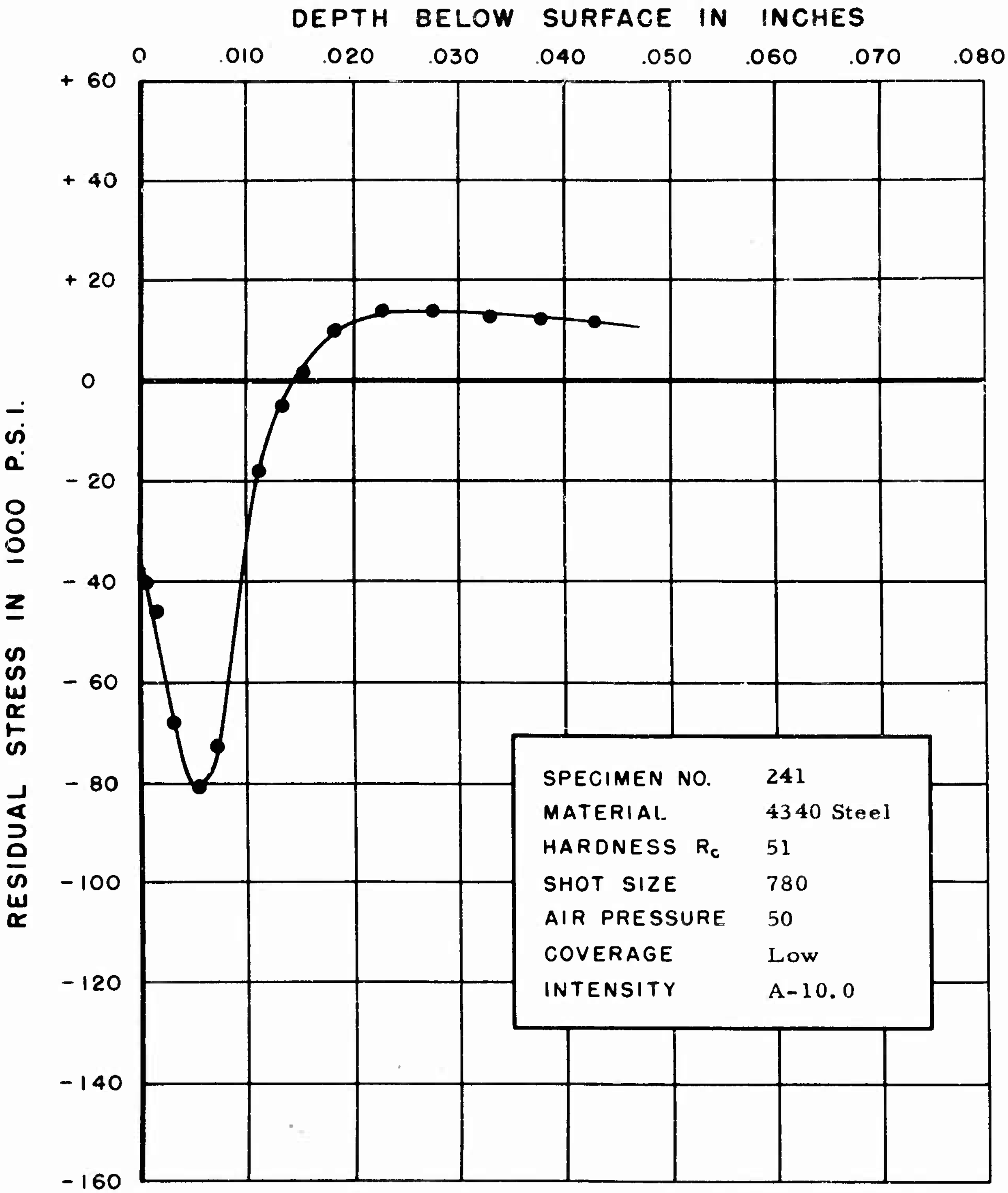


FIGURE 274. RESIDUAL STRESS DISTRIBUTION

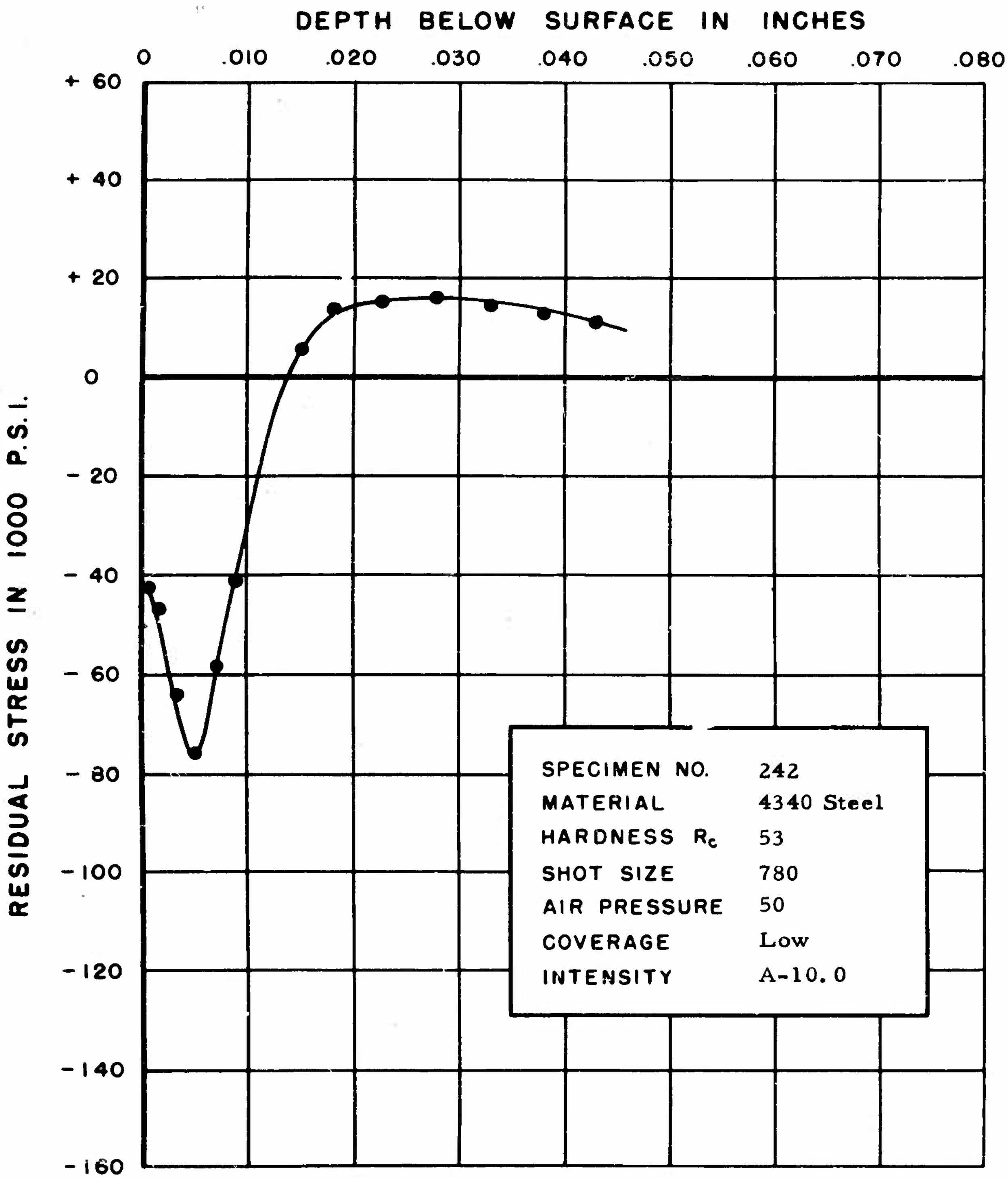
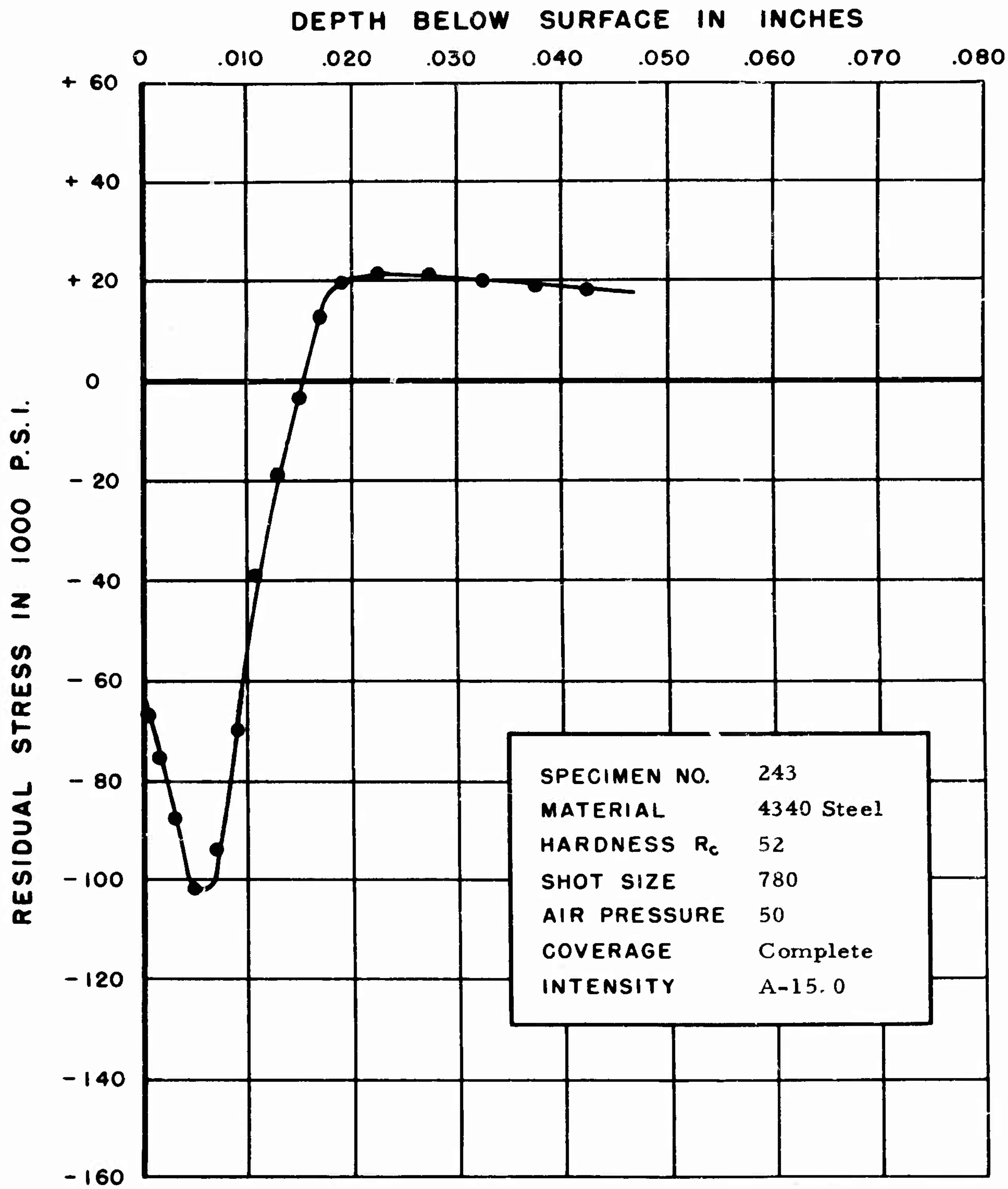


FIGURE 275. RESIDUAL STRESS DISTRIBUTION



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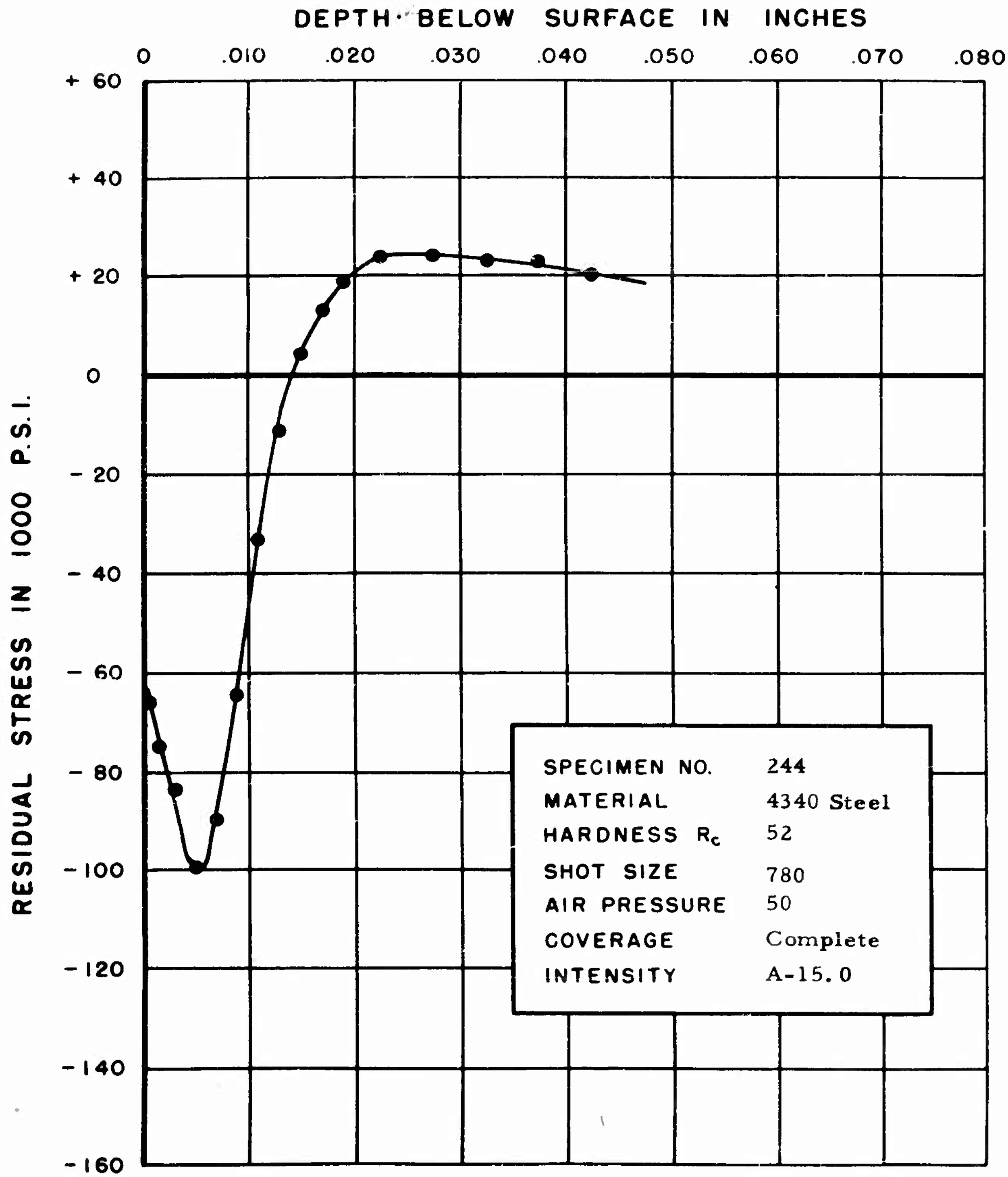


FIGURE 277. RESIDUAL STRESS DISTRIBUTION

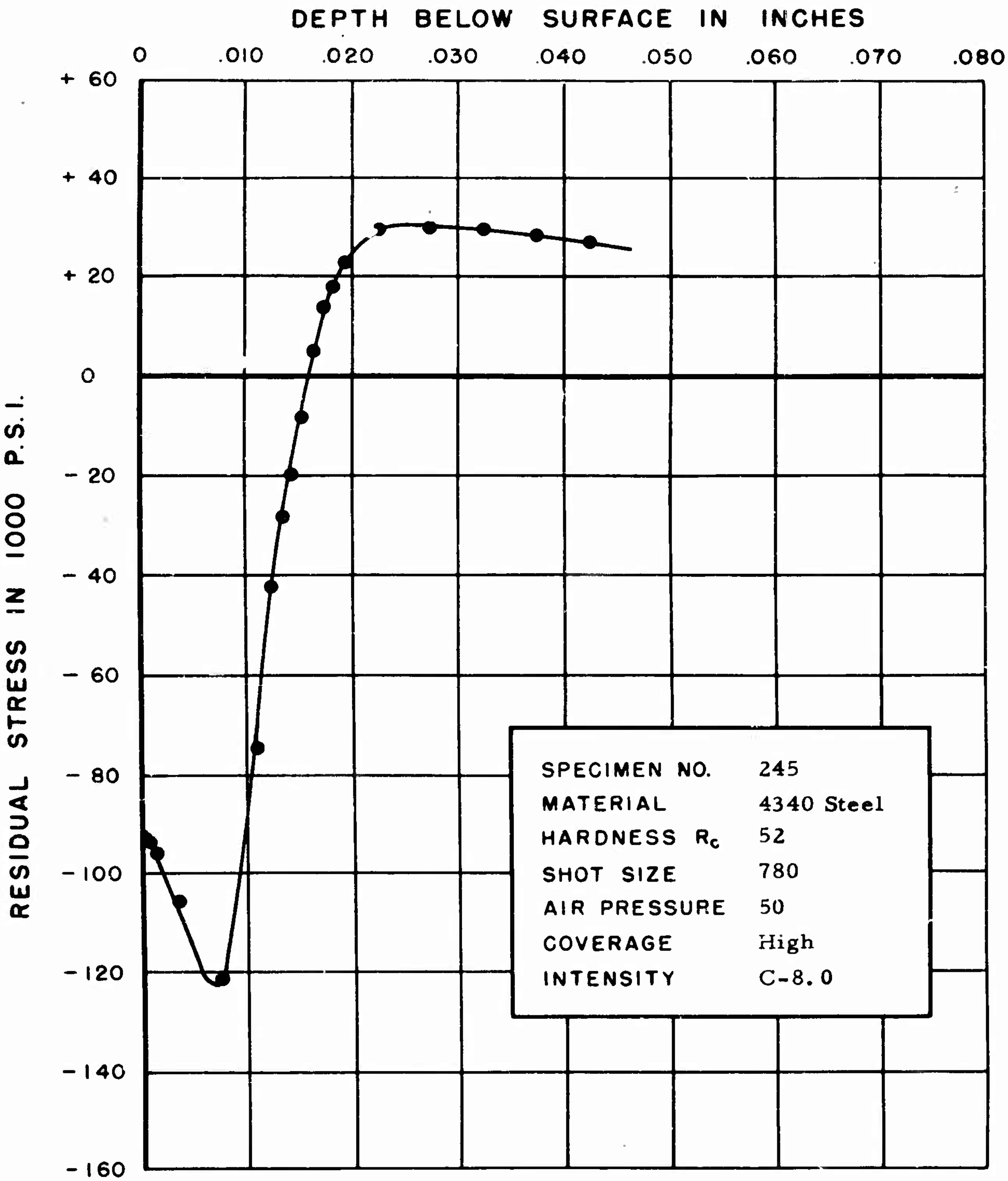


FIGURE 278. RESIDUAL STRESS DISTRIBUTION

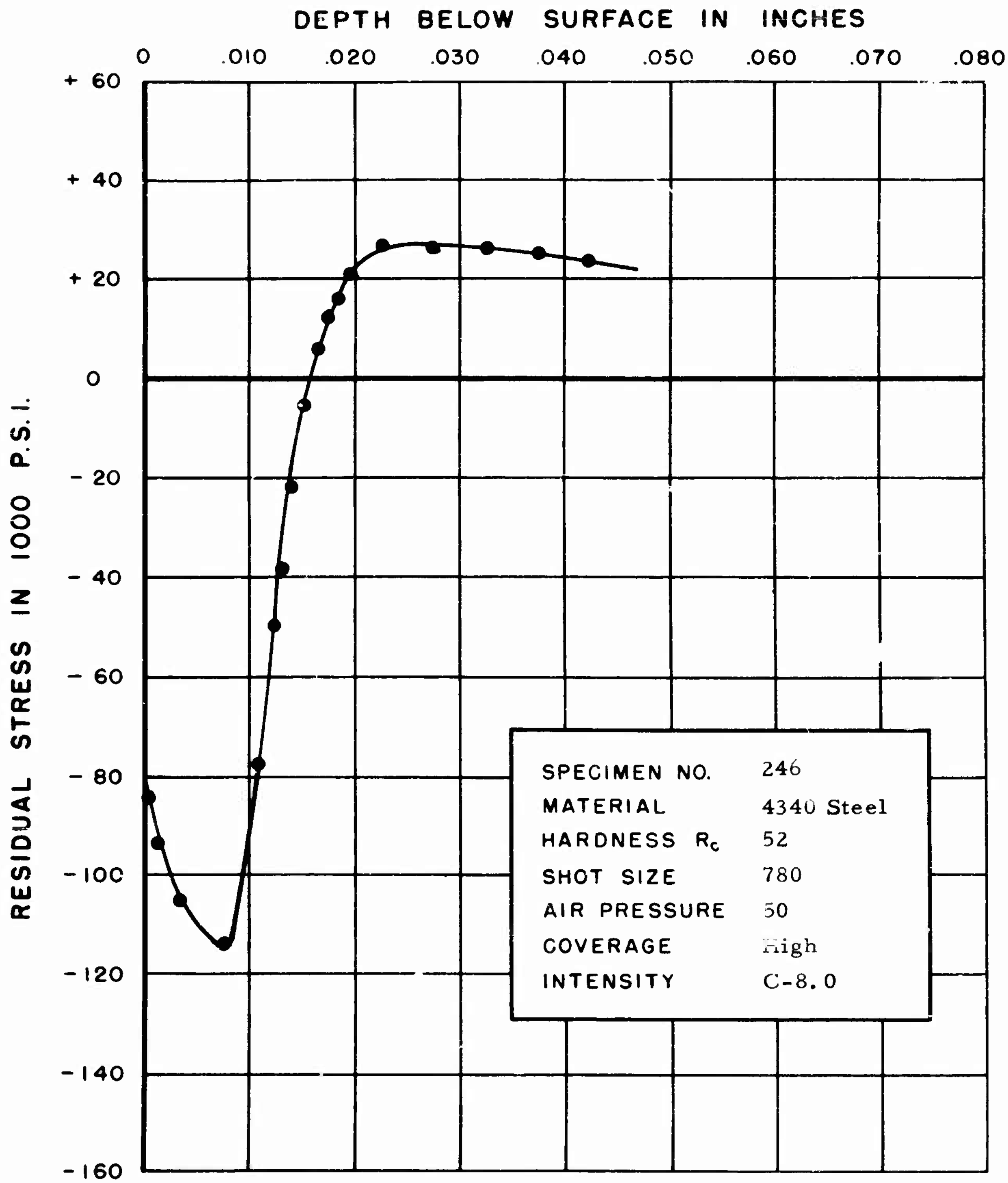
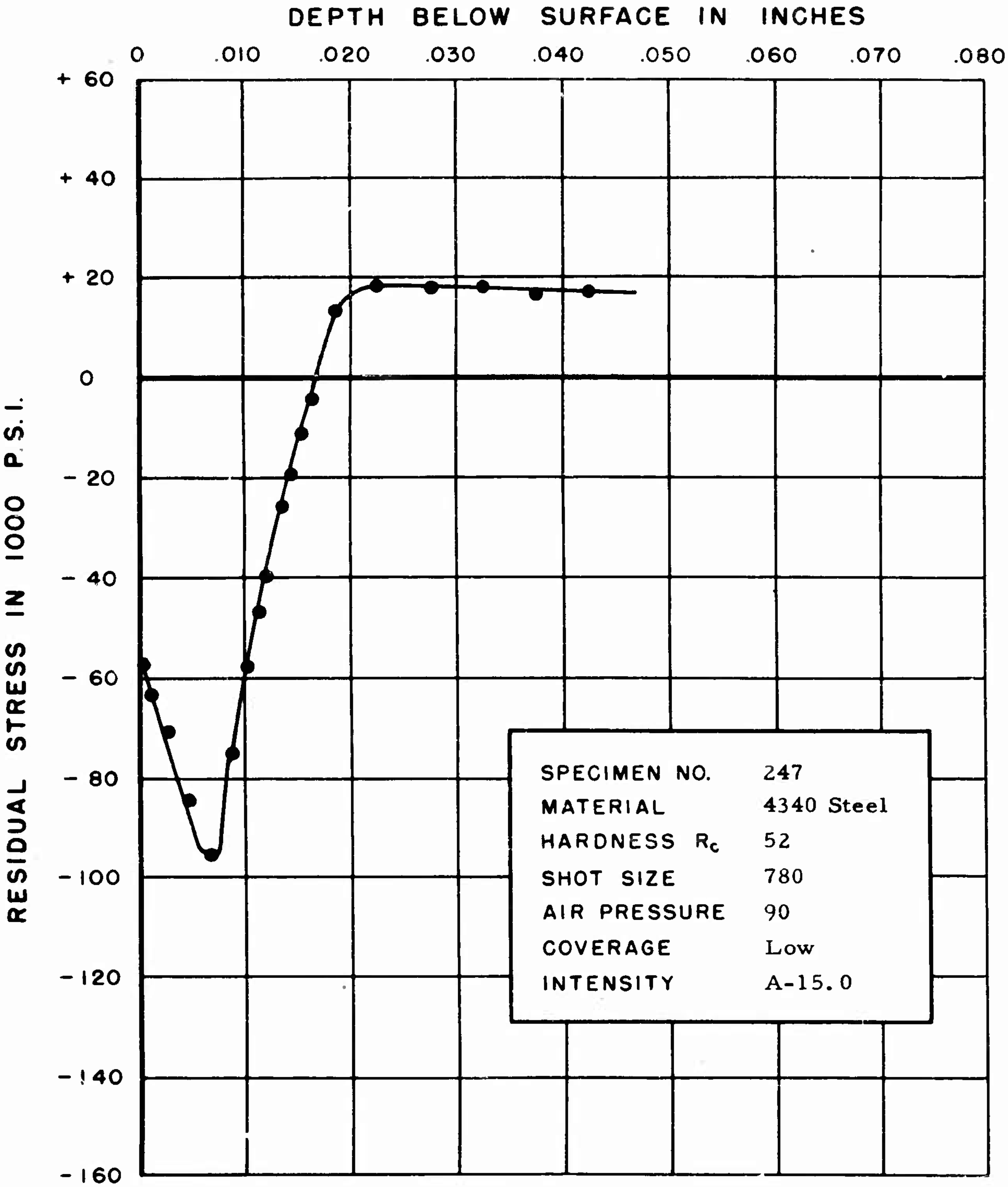


FIGURE 279. RESIDUAL STRESS DISTRIBUTION



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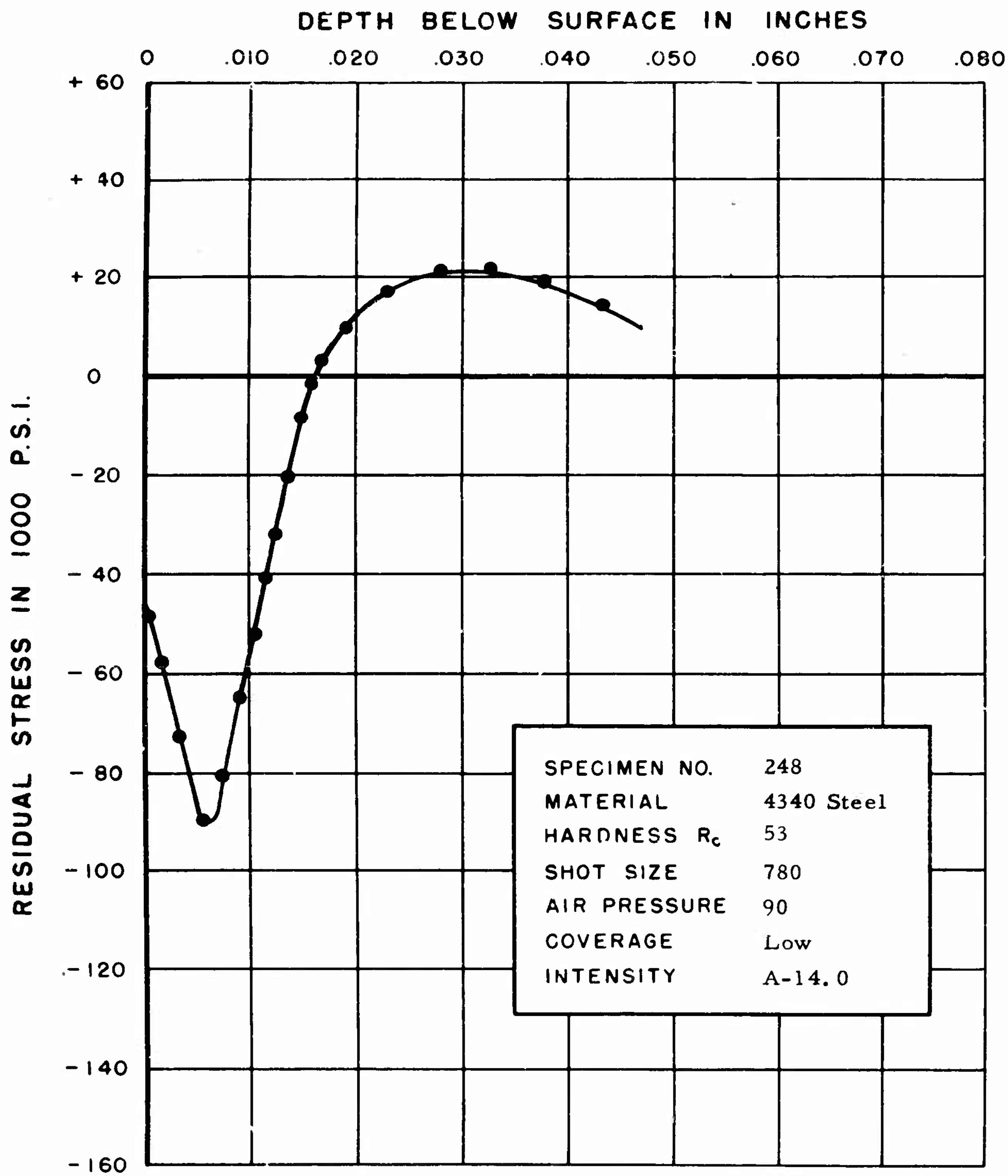


FIGURE 281. RESIDUAL STRESS DISTRIBUTION

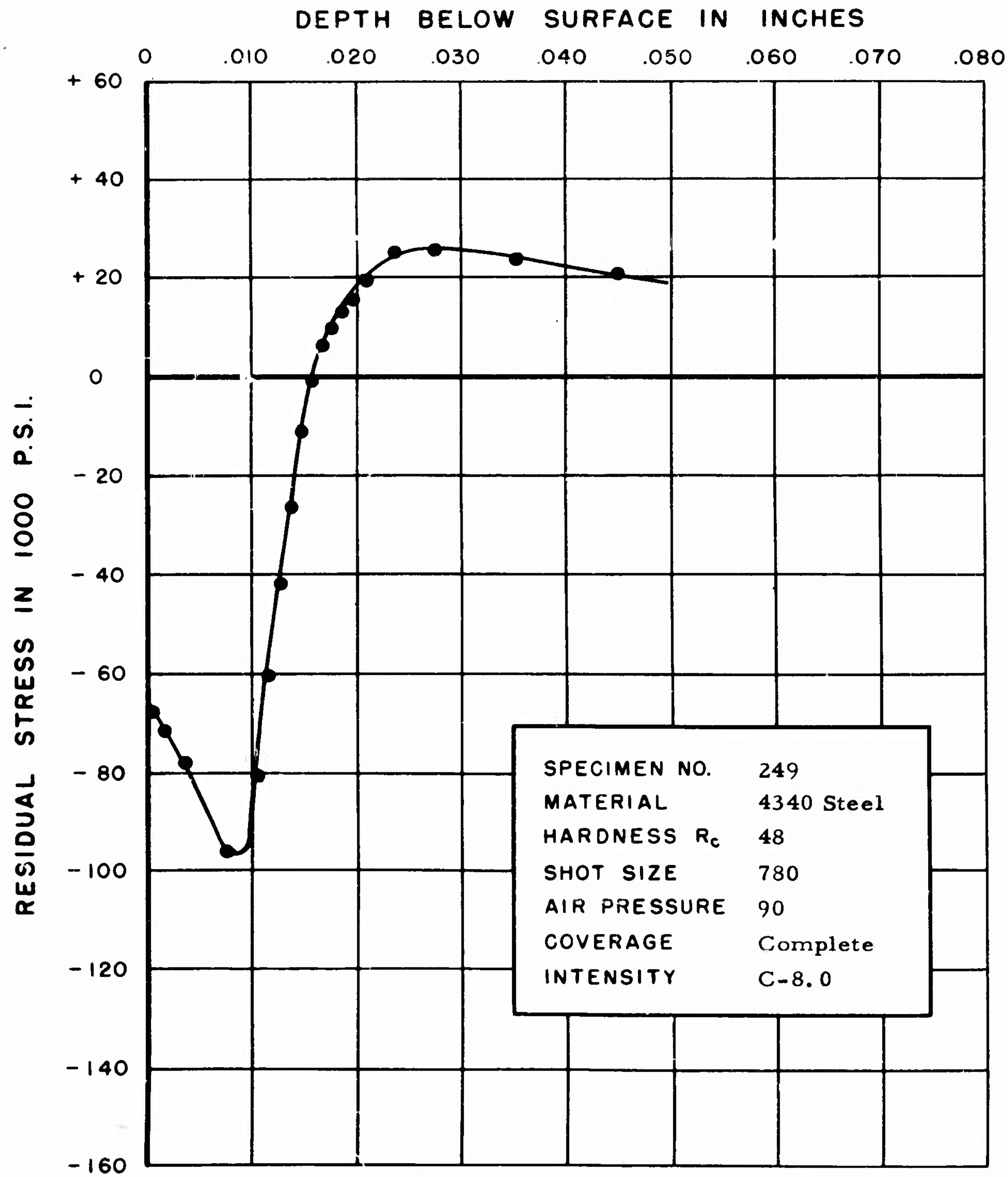


FIGURE 282. RESIDUAL STRESS DISTRIBUTION

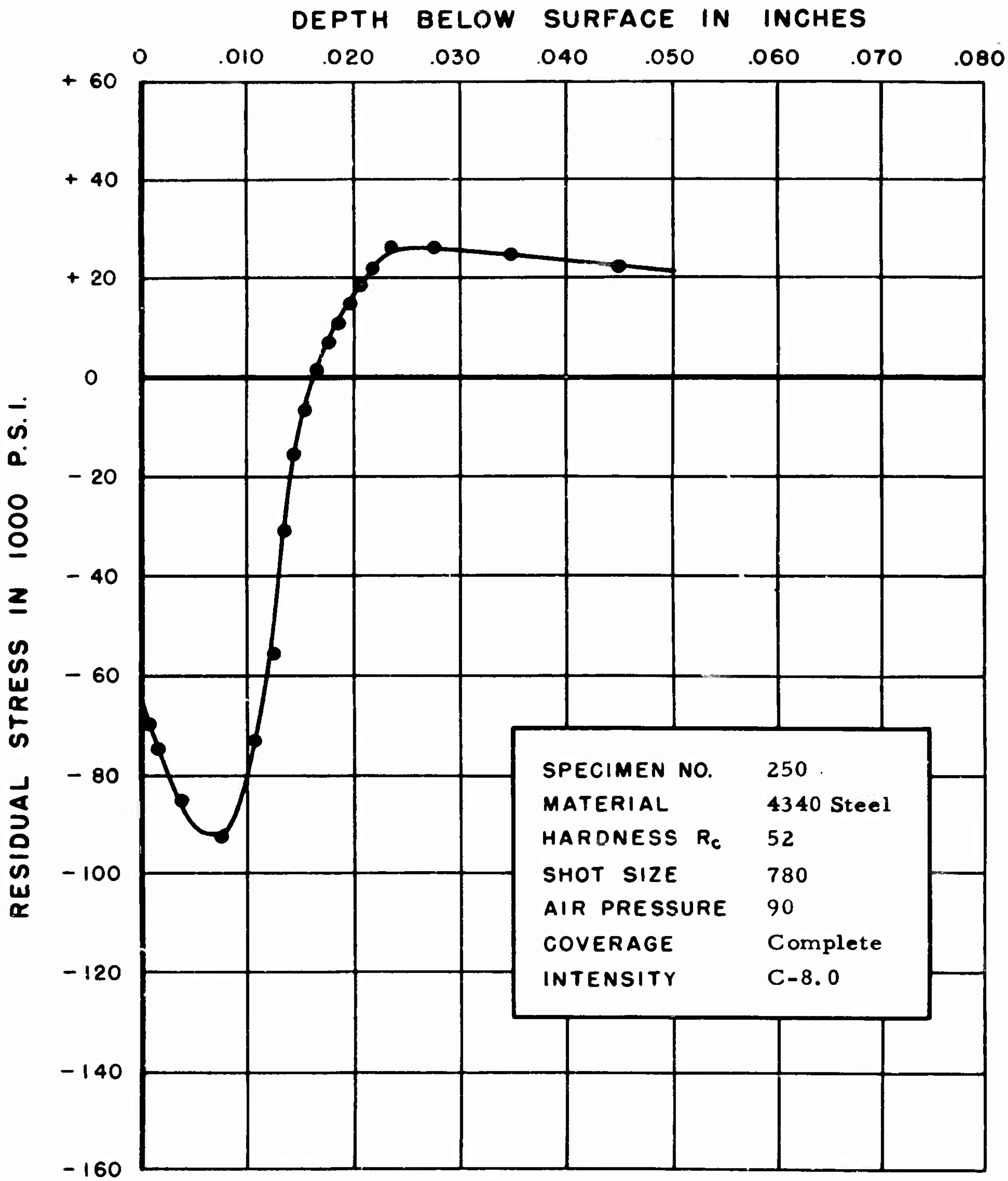


FIGURE 283. RESIDUAL STRESS DISTRIBUTION

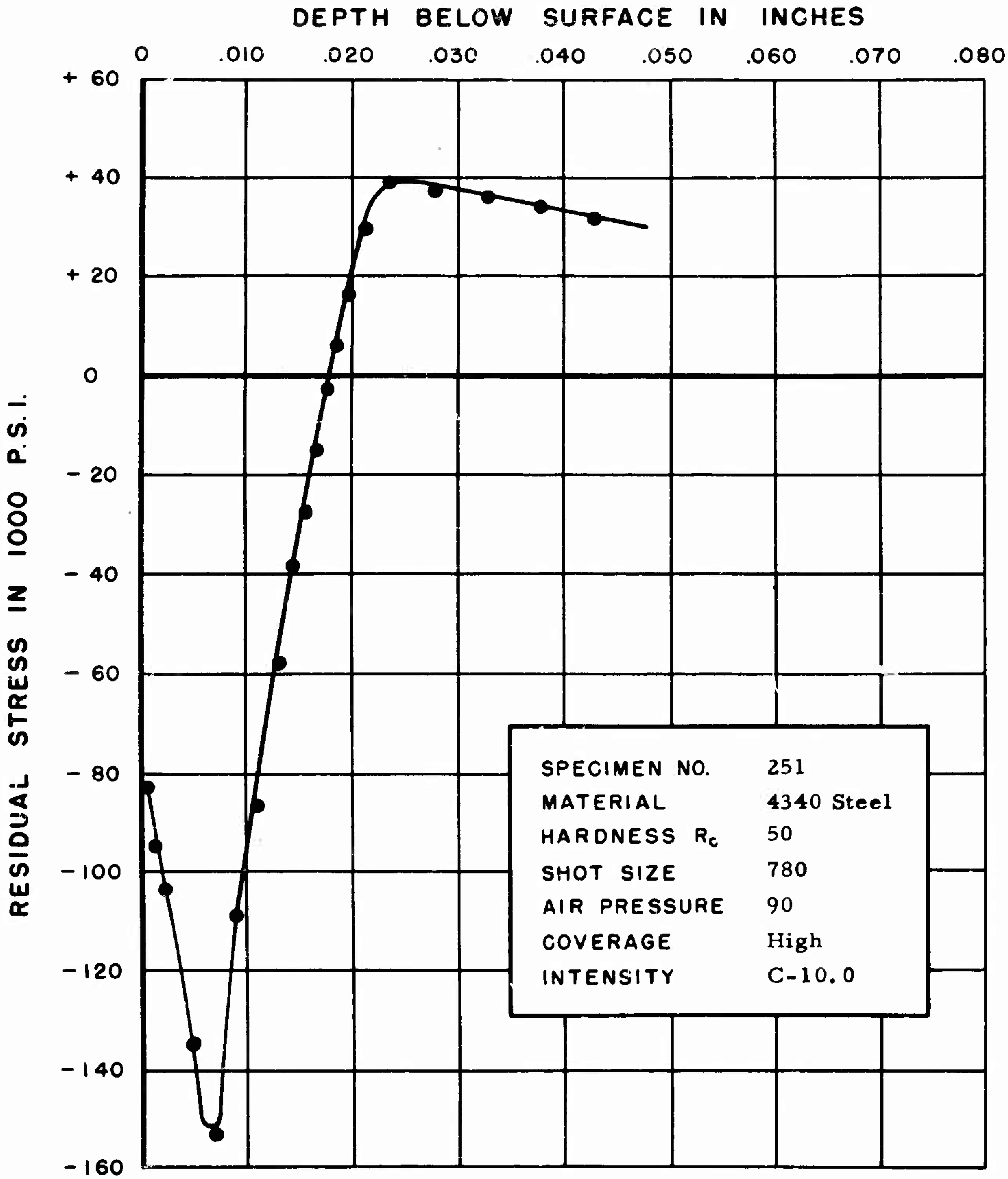


FIGURE 284. RESIDUAL STRESS DISTRIBUTION

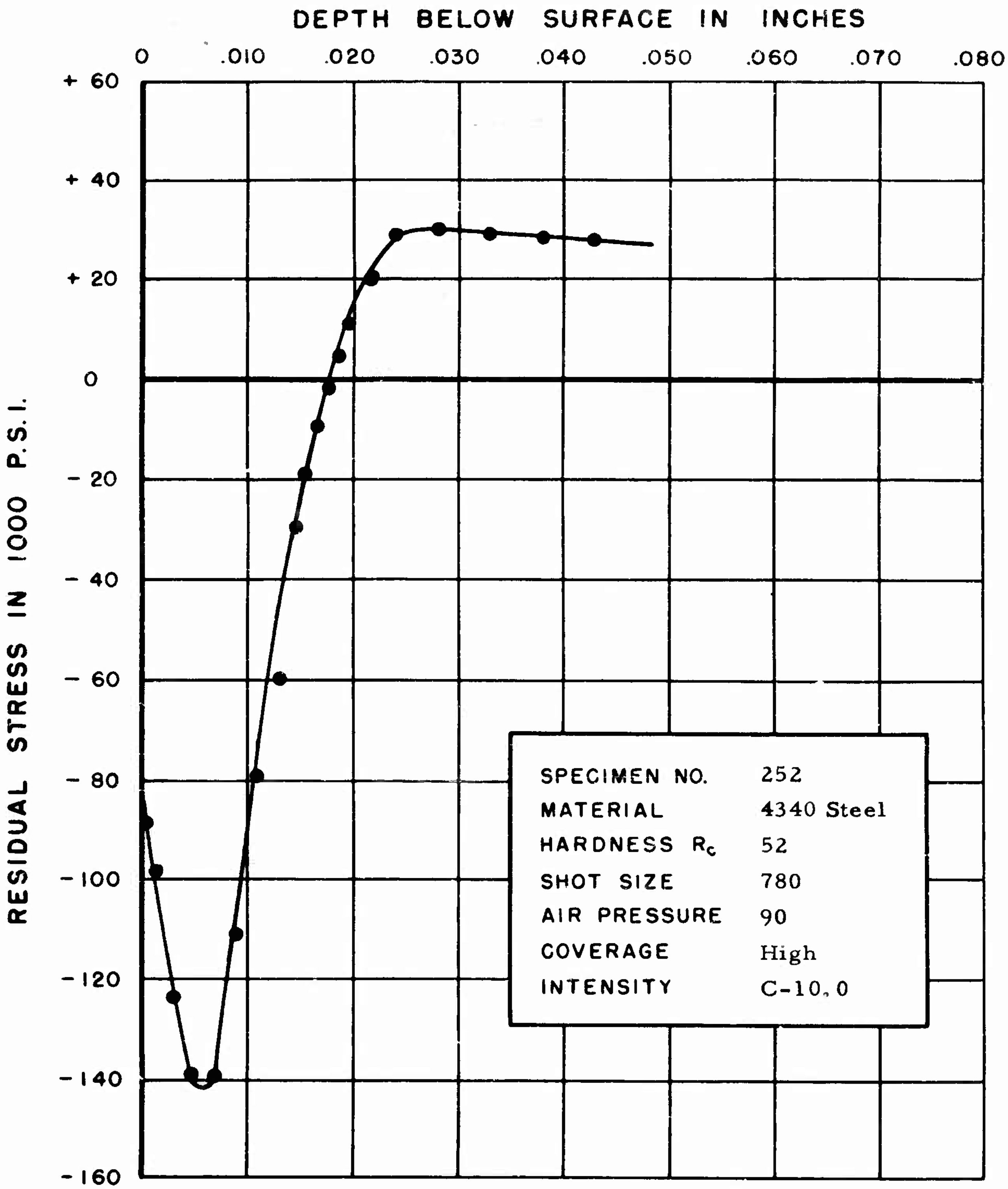


FIGURE 285. RESIDUAL STRESS DISTRIBUTION

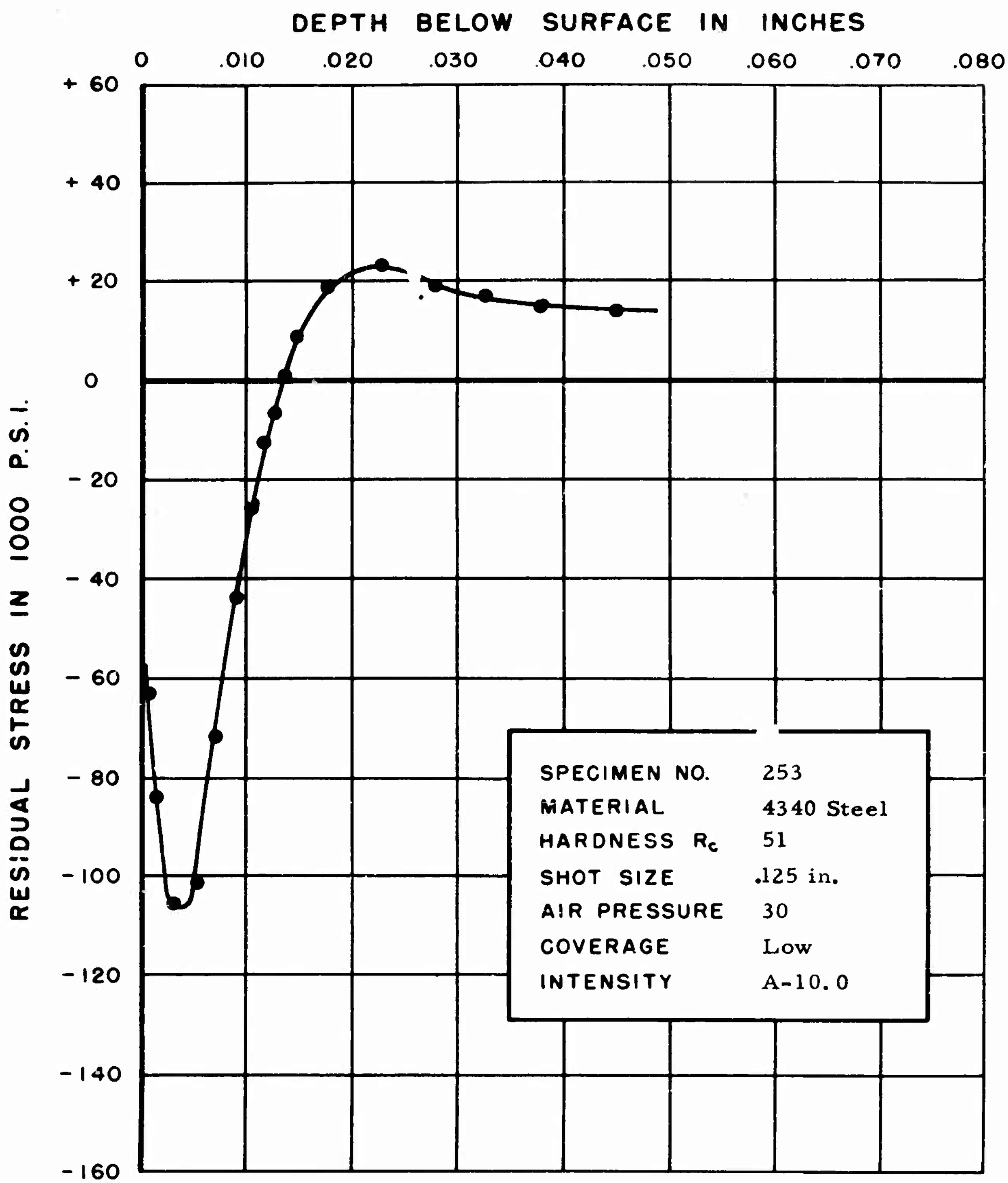


FIGURE 286. RESIDUAL STRESS DISTRIBUTION

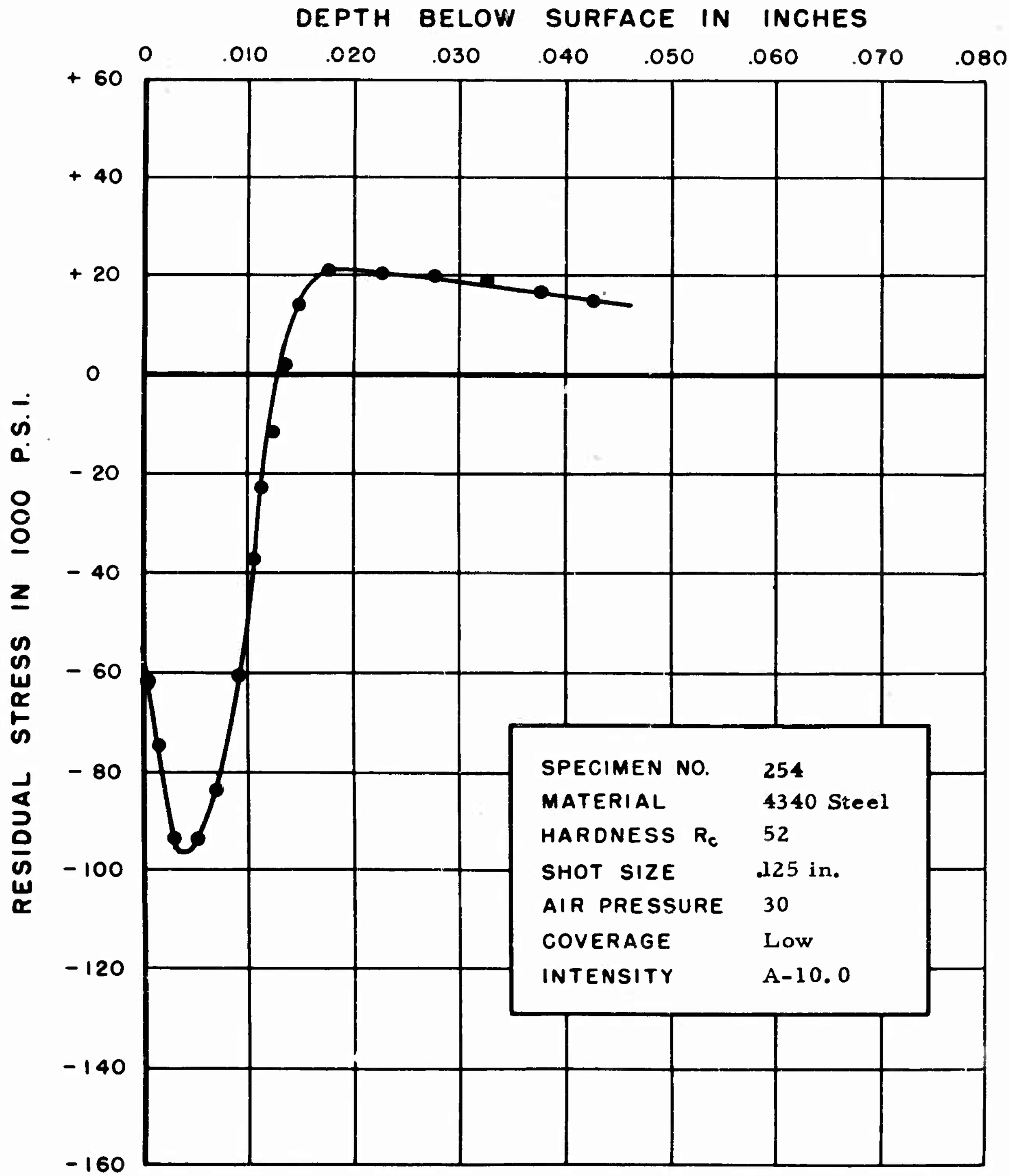


FIGURE 287. RESIDUAL STRESS DISTRIBUTION

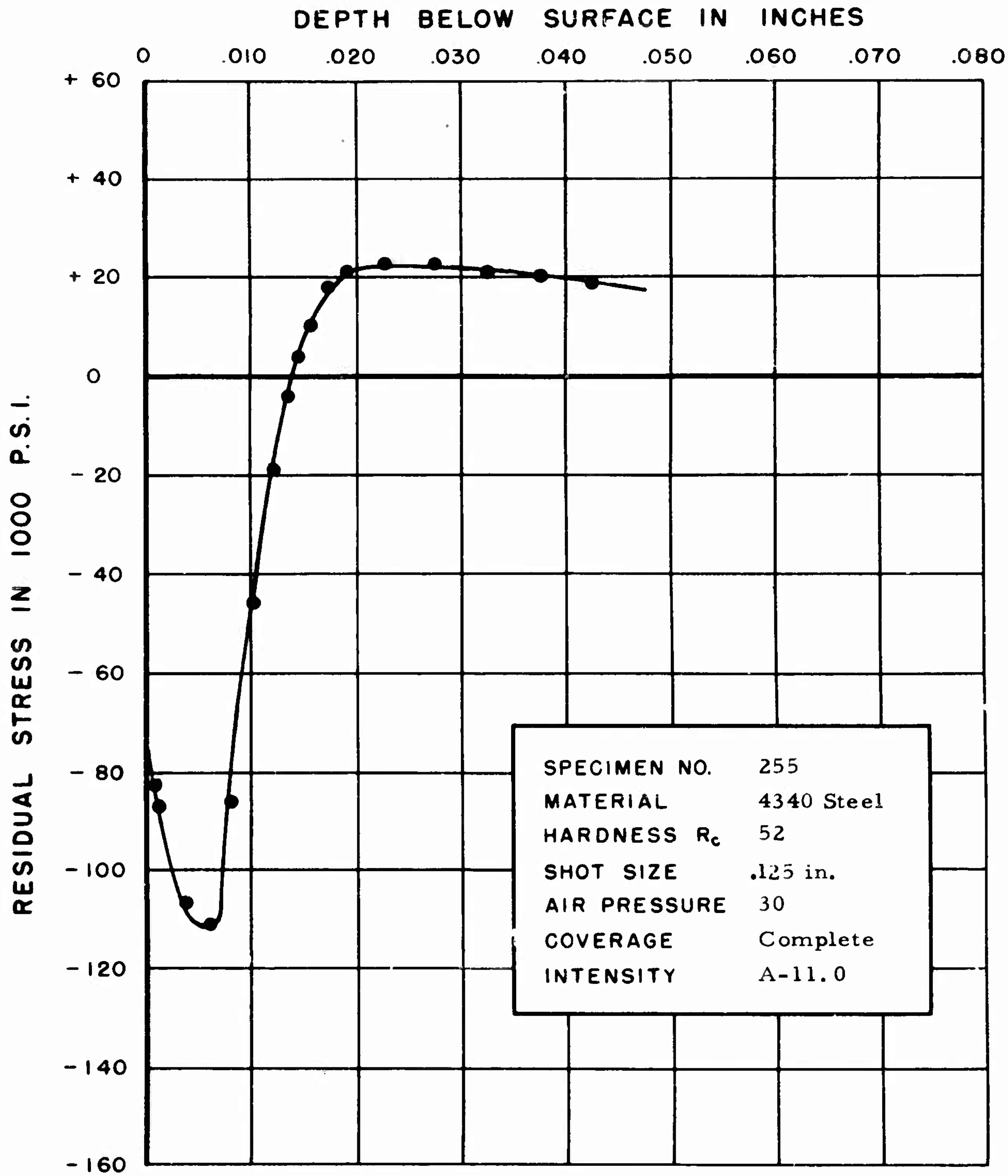


FIGURE 288. RESIDUAL STRESS DISTRIBUTION

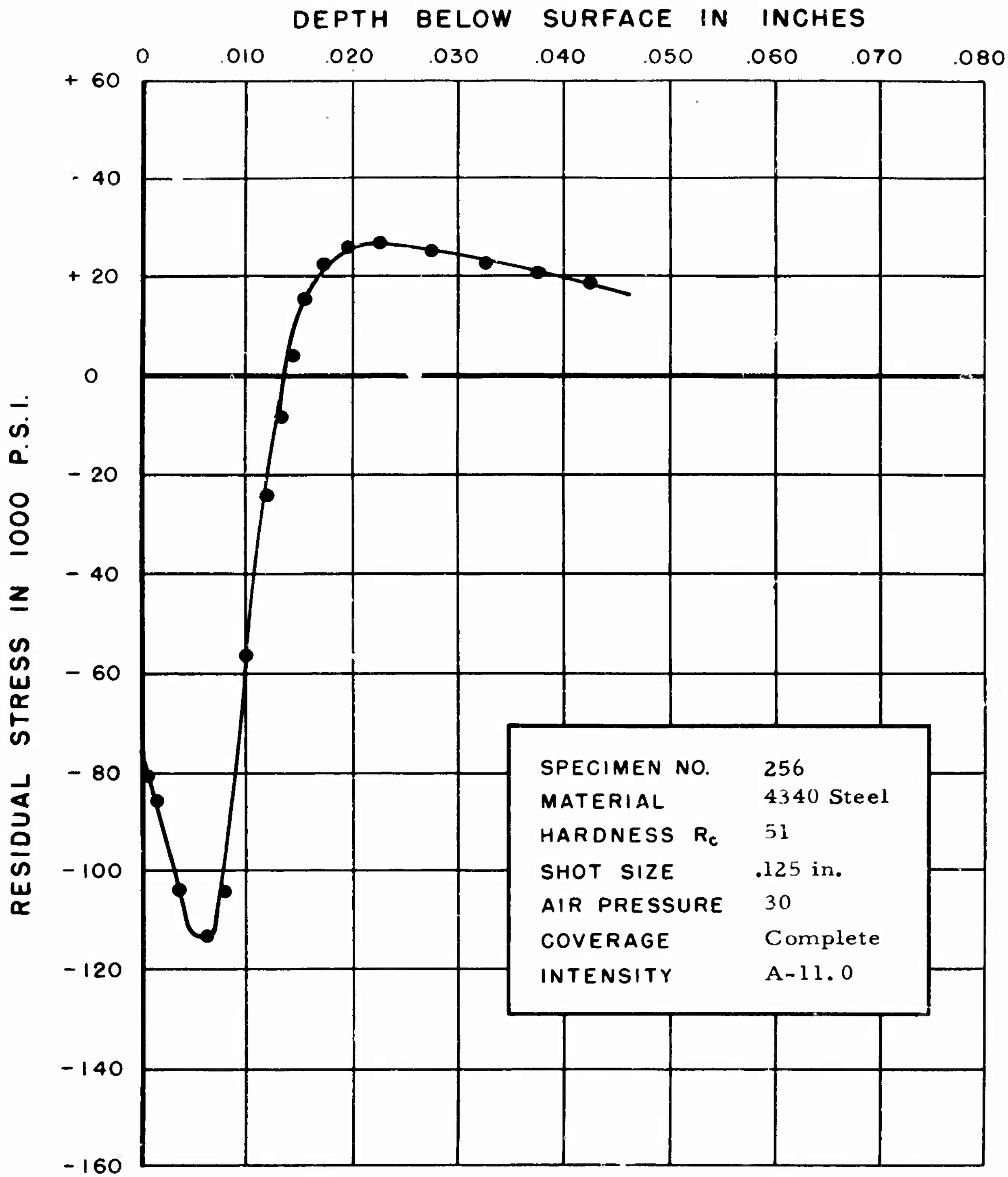


FIGURE 289. RESIDUAL STRESS DISTRIBUTION

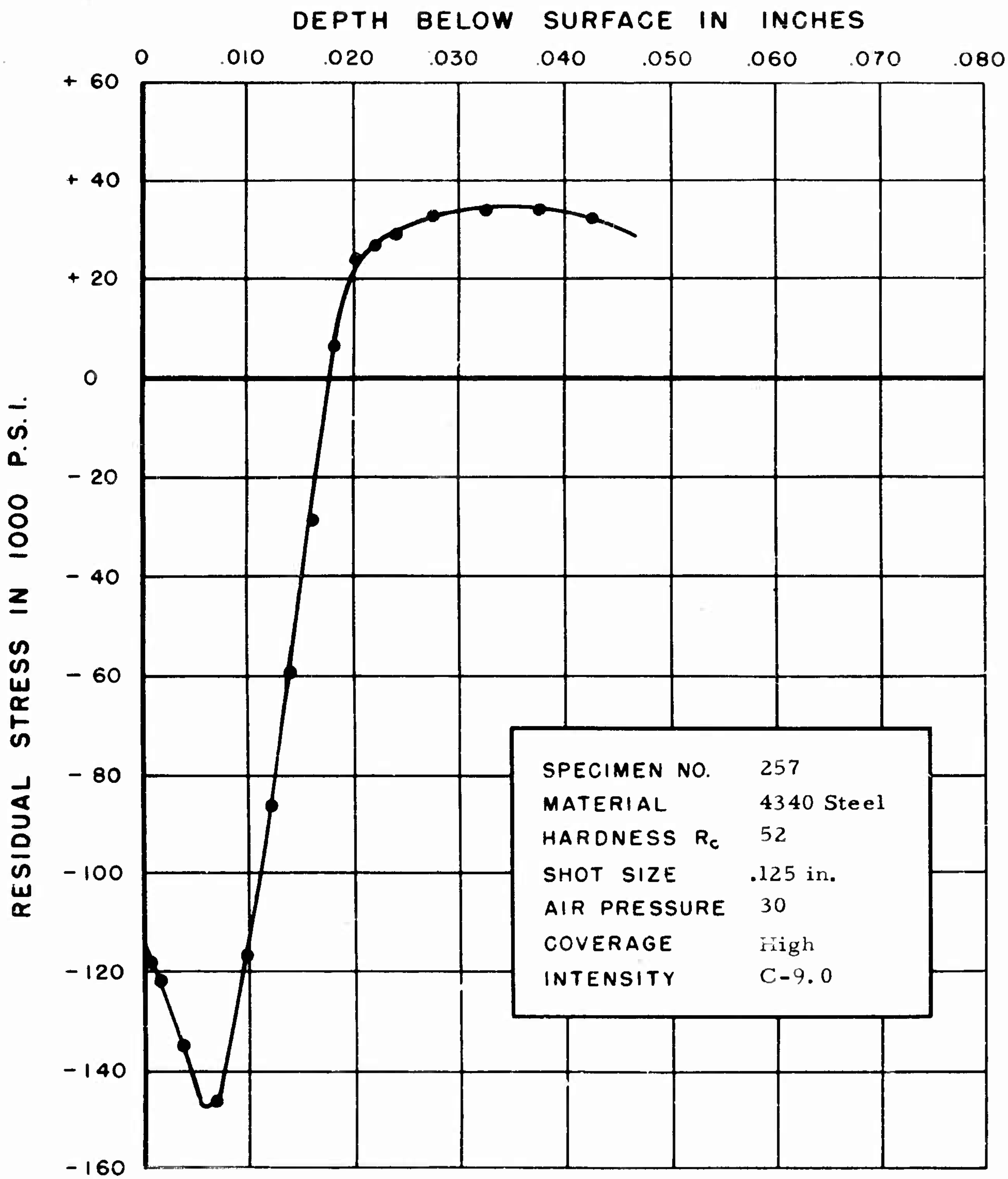


FIGURE 290. RESIDUAL STRESS DISTRIBUTION

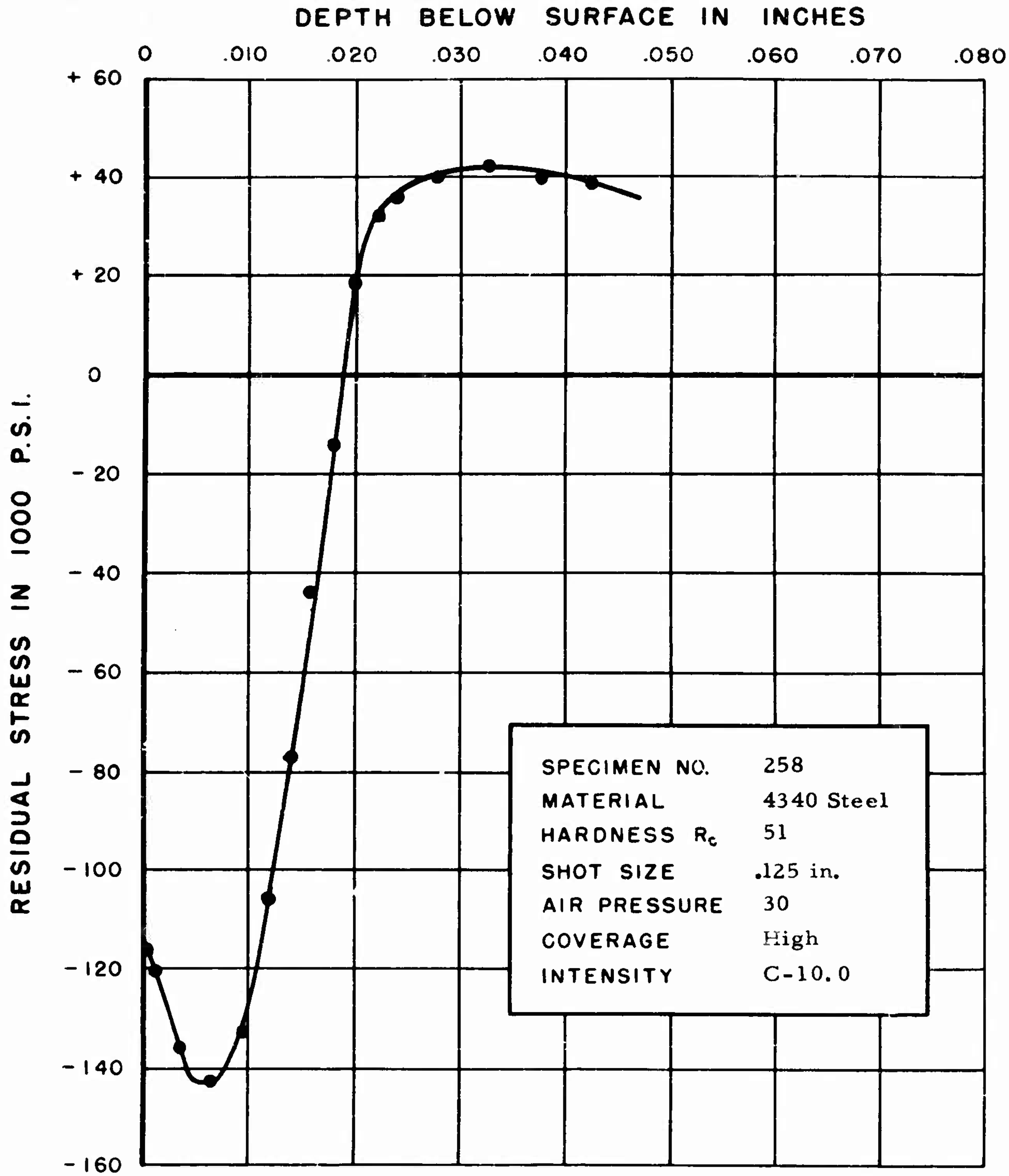
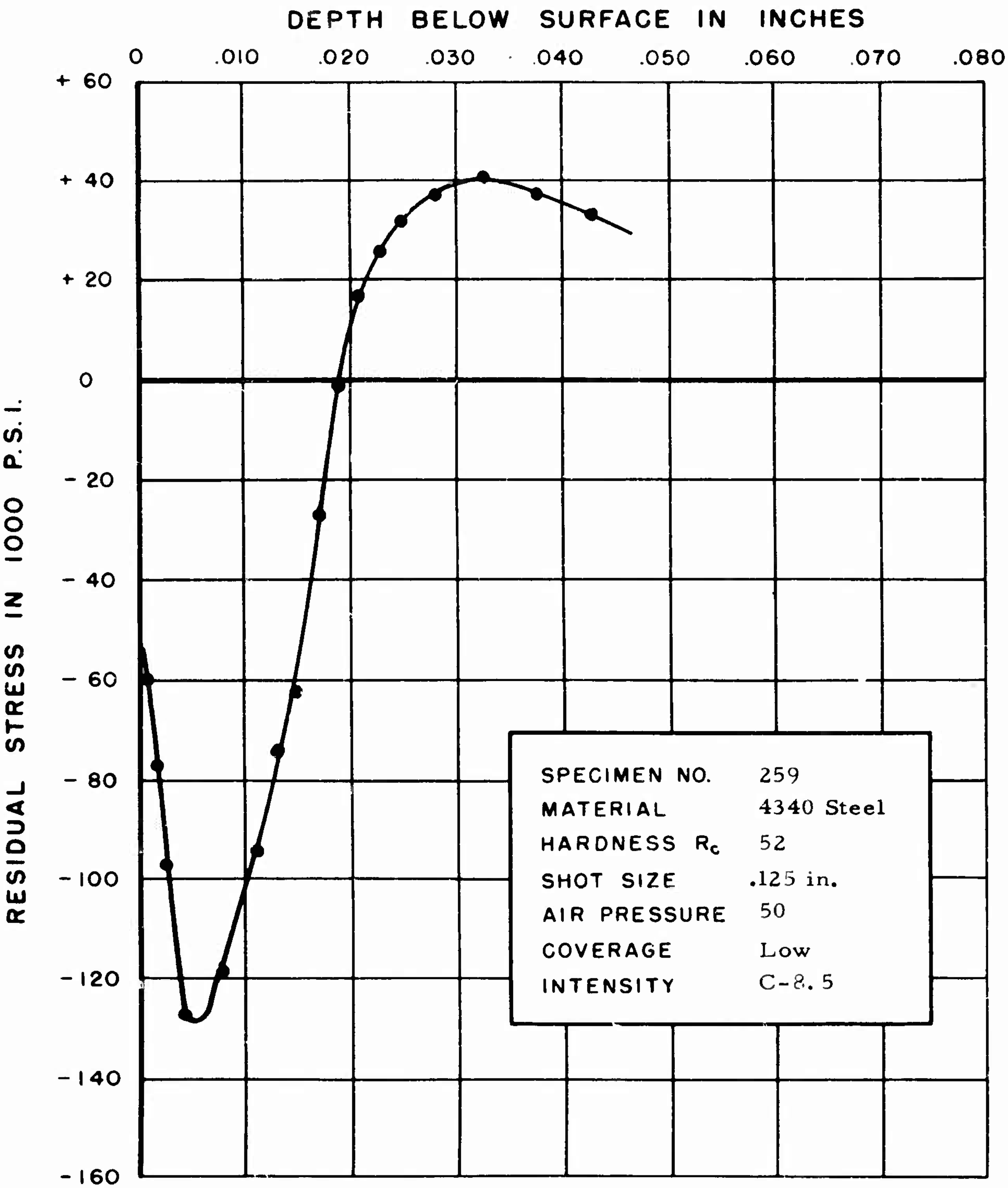


FIGURE 291. RESIDUAL STRESS DISTRIBUTION



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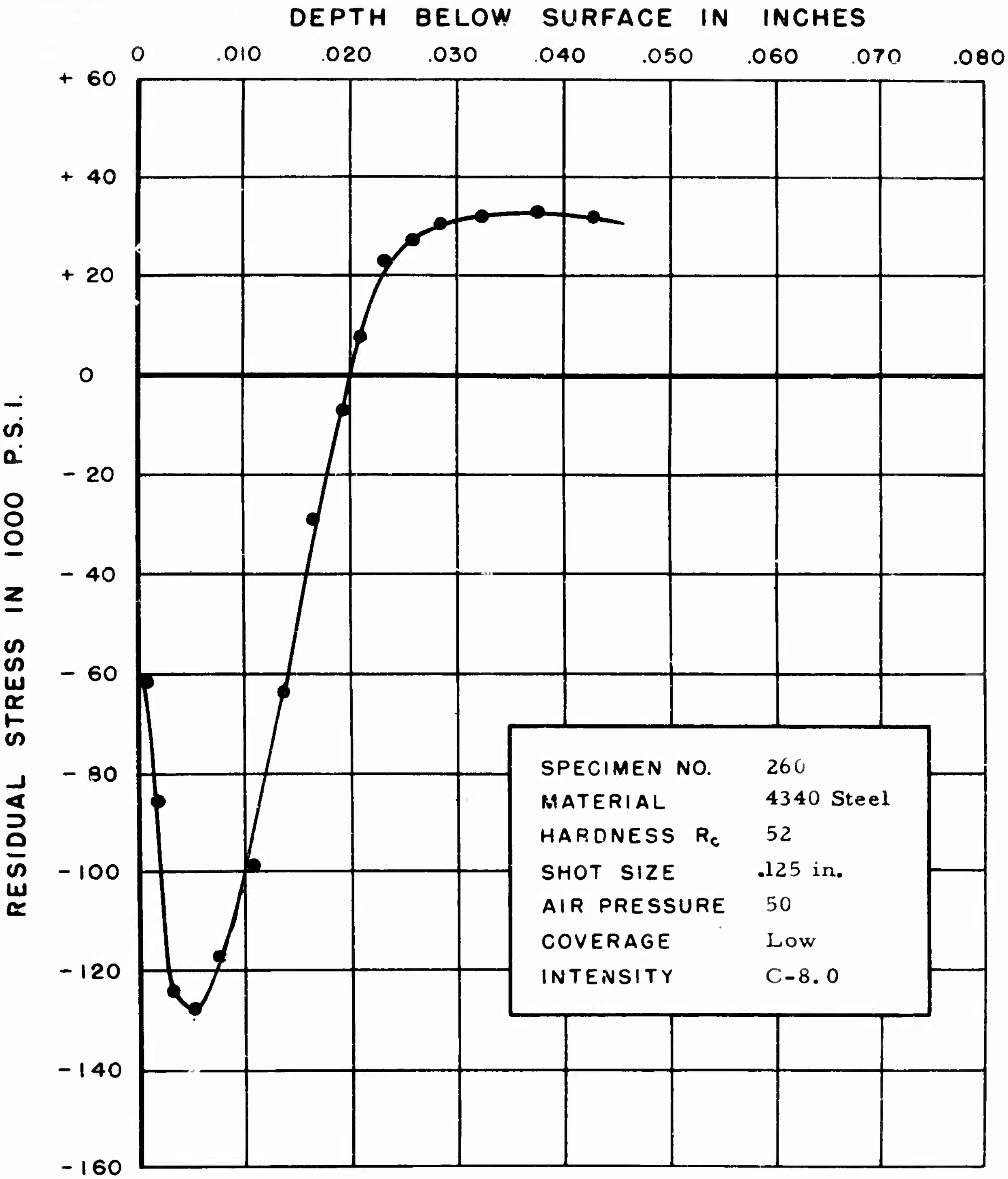

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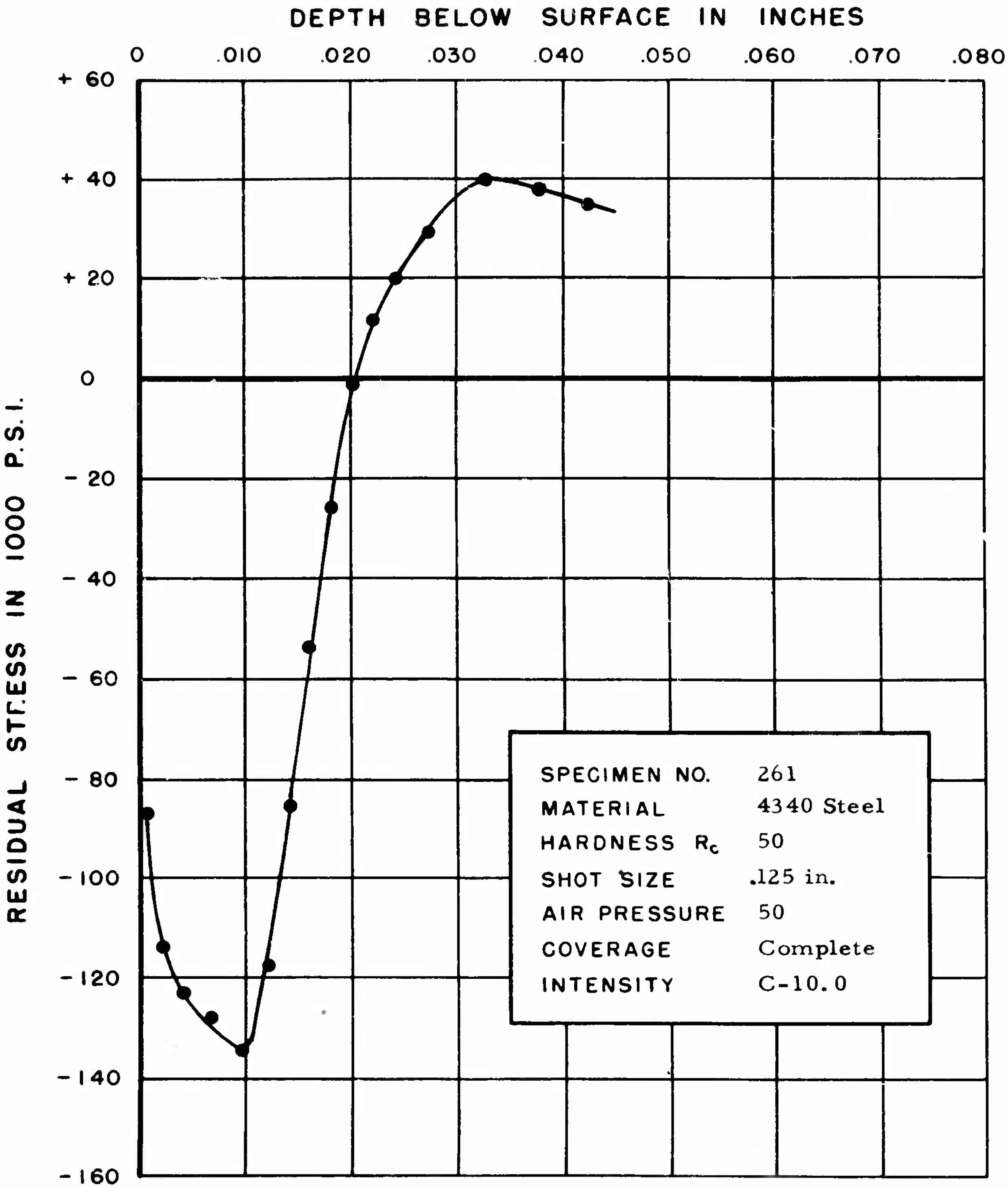

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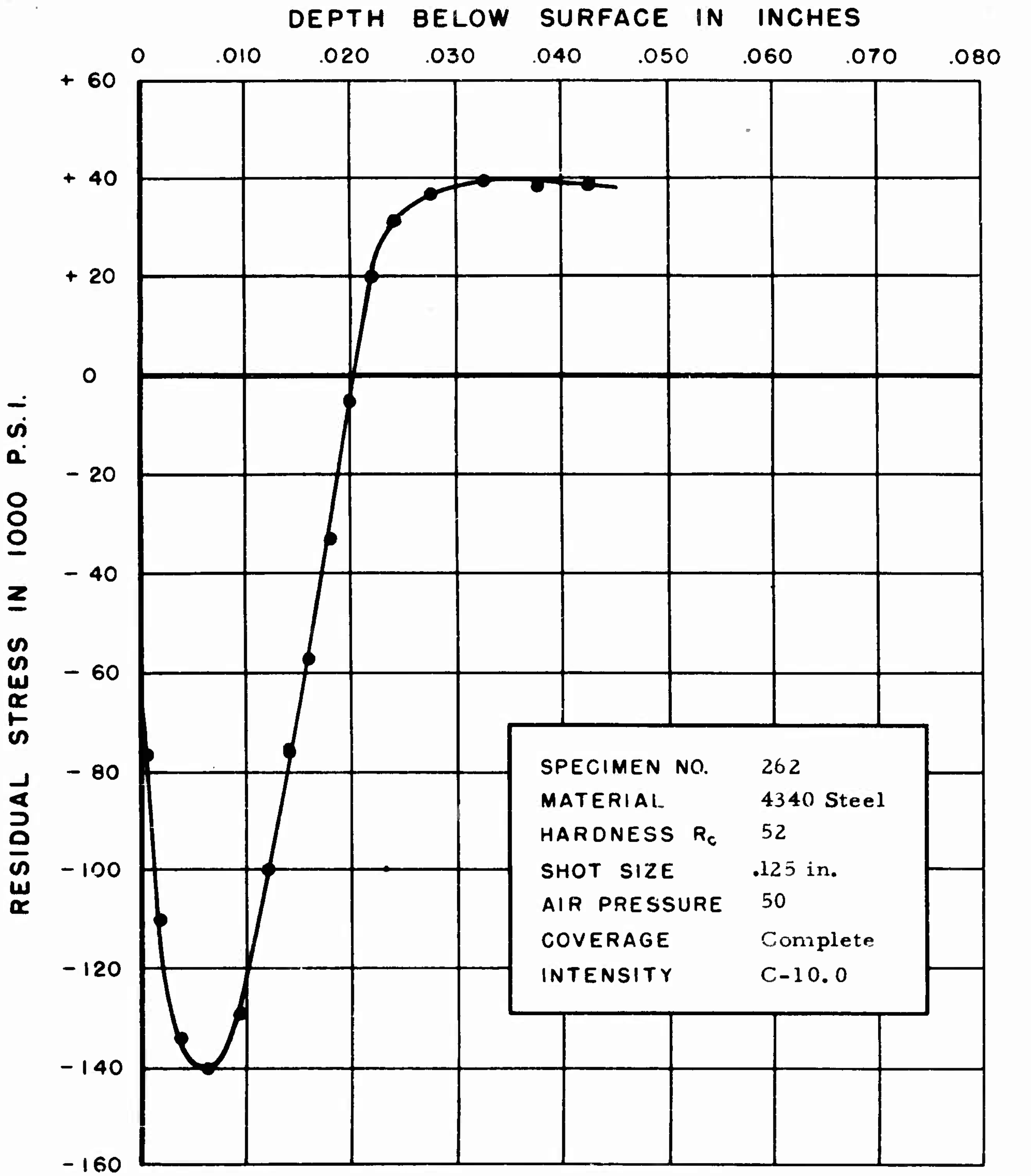

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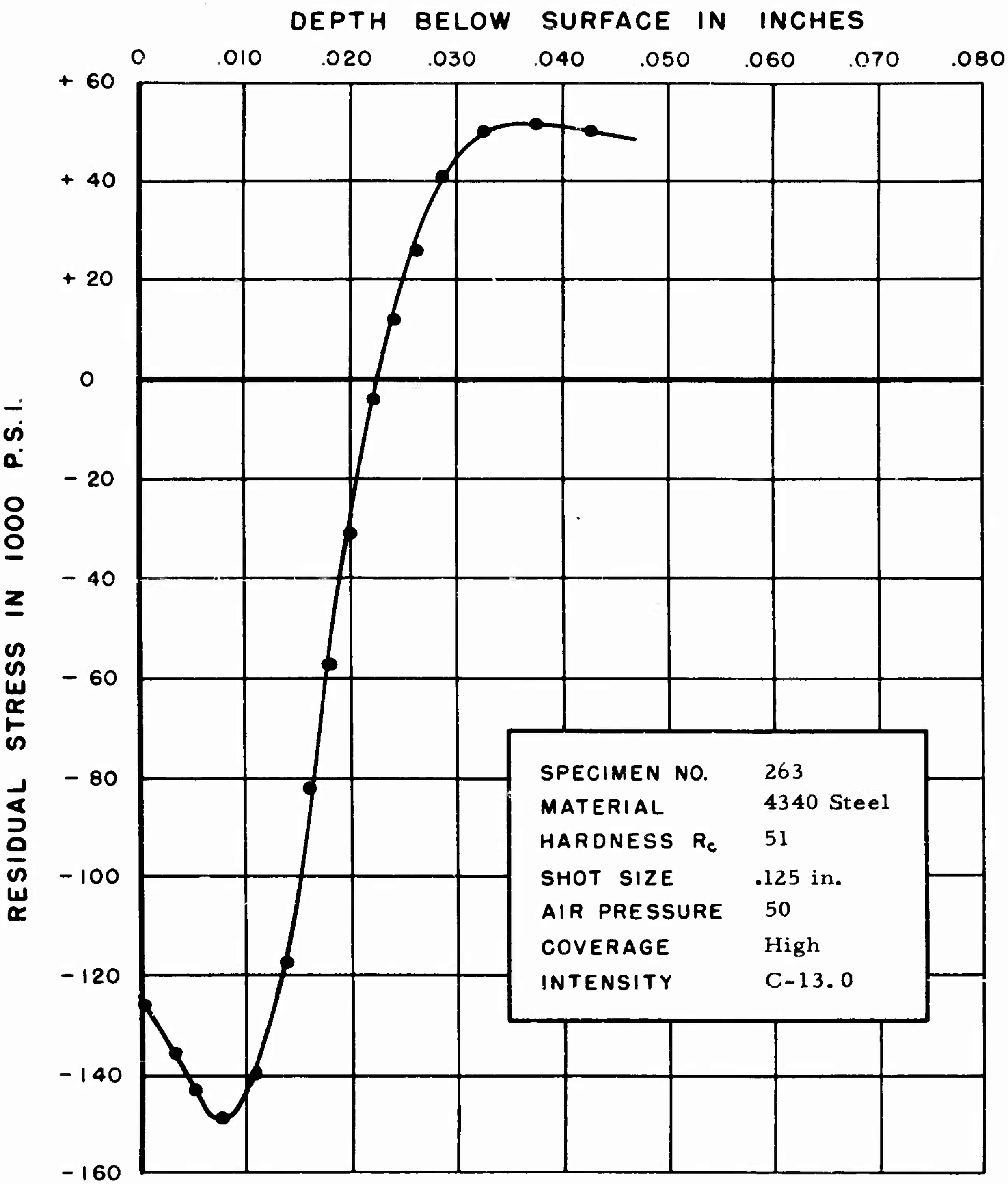

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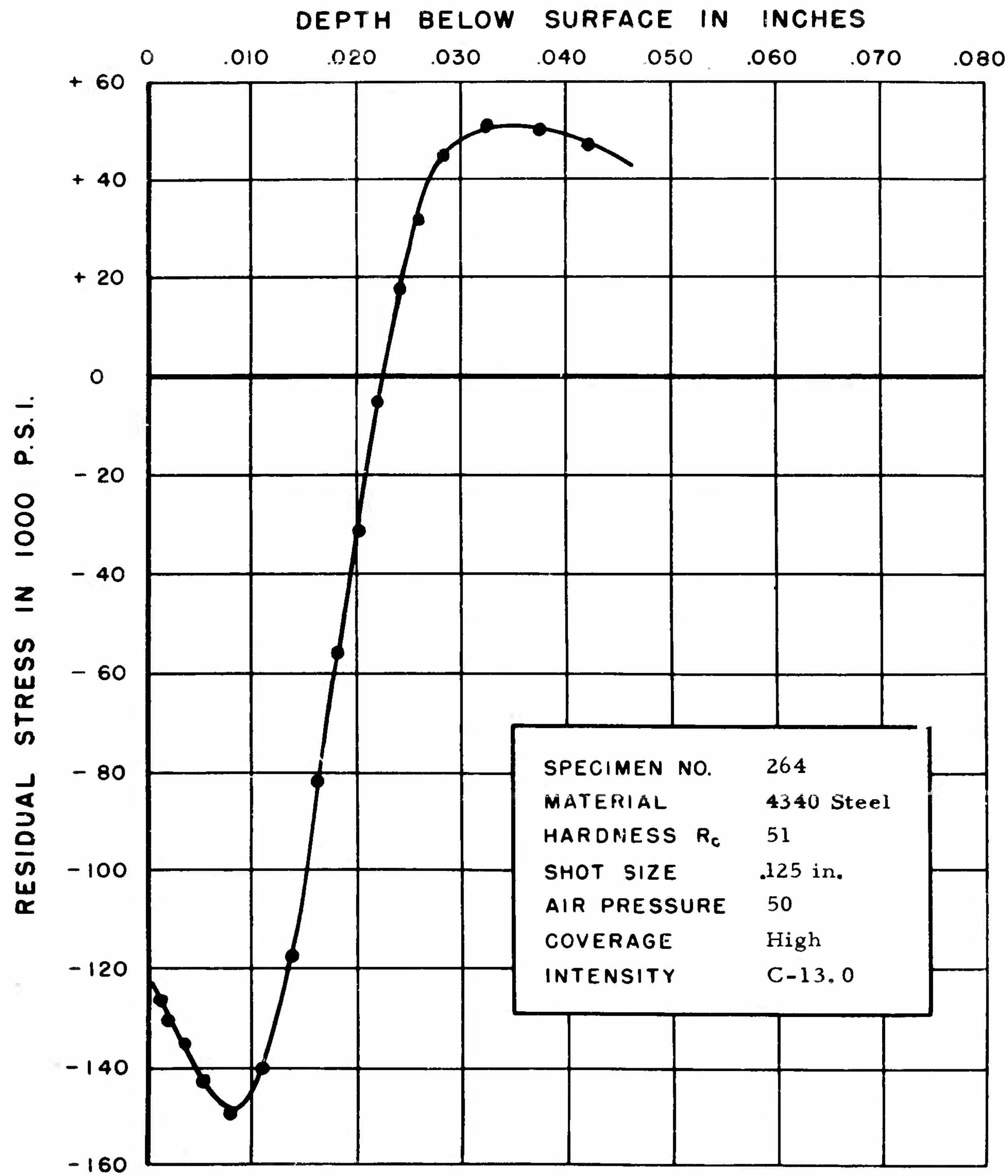


FIGURE 297. RESIDUAL STRESS DISTRIBUTION

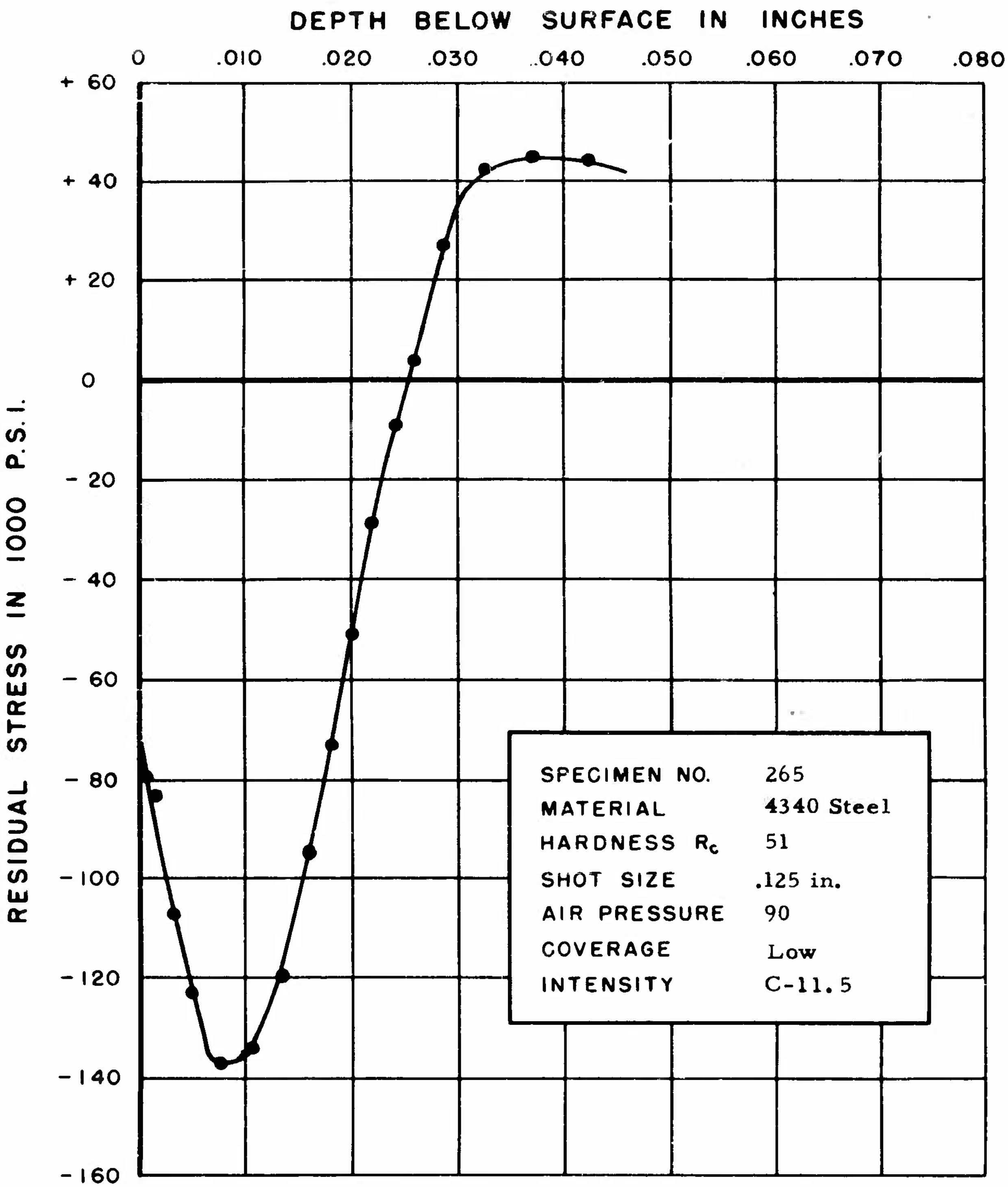


FIGURE 298. RESIDUAL STRESS DISTRIBUTION

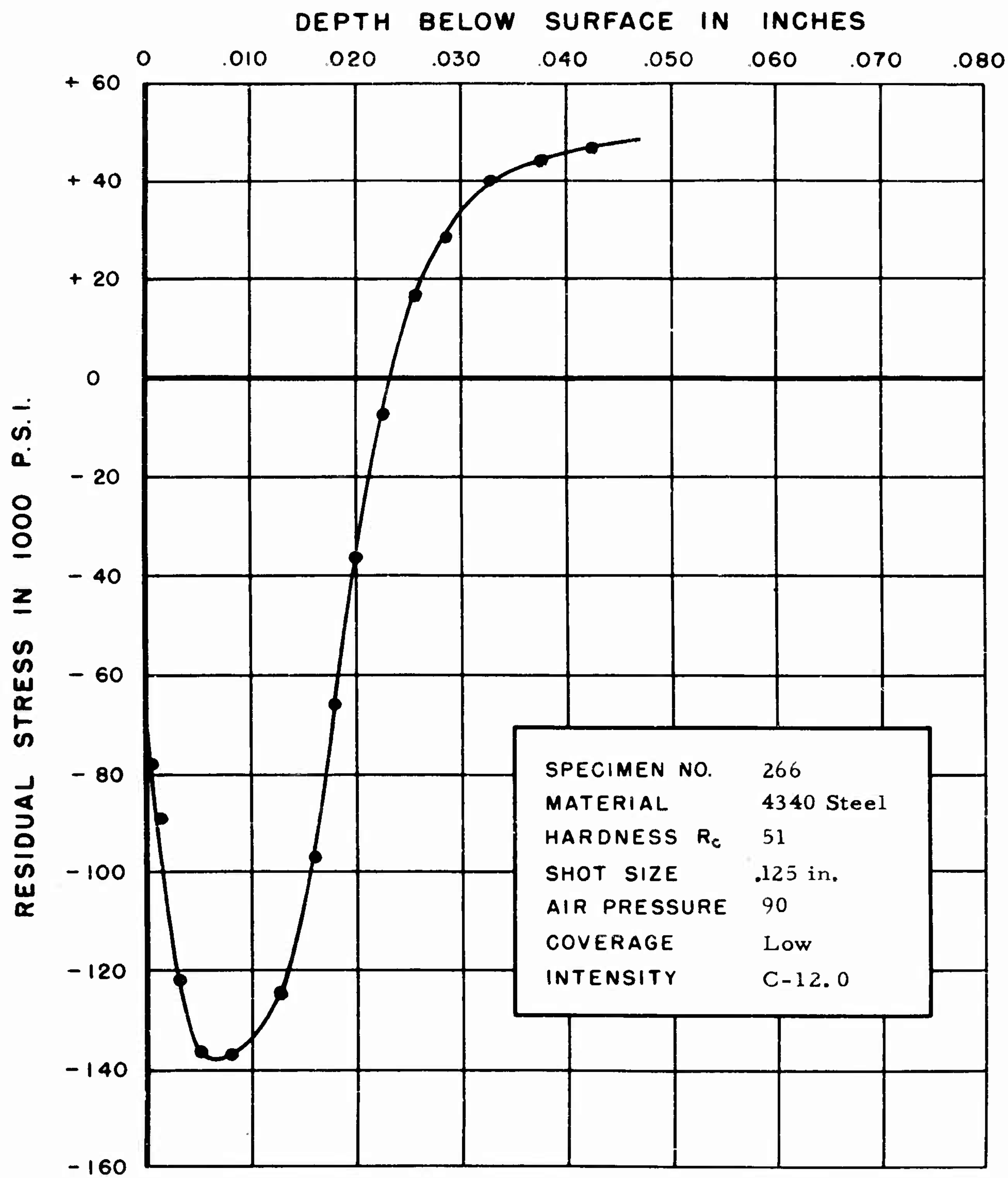
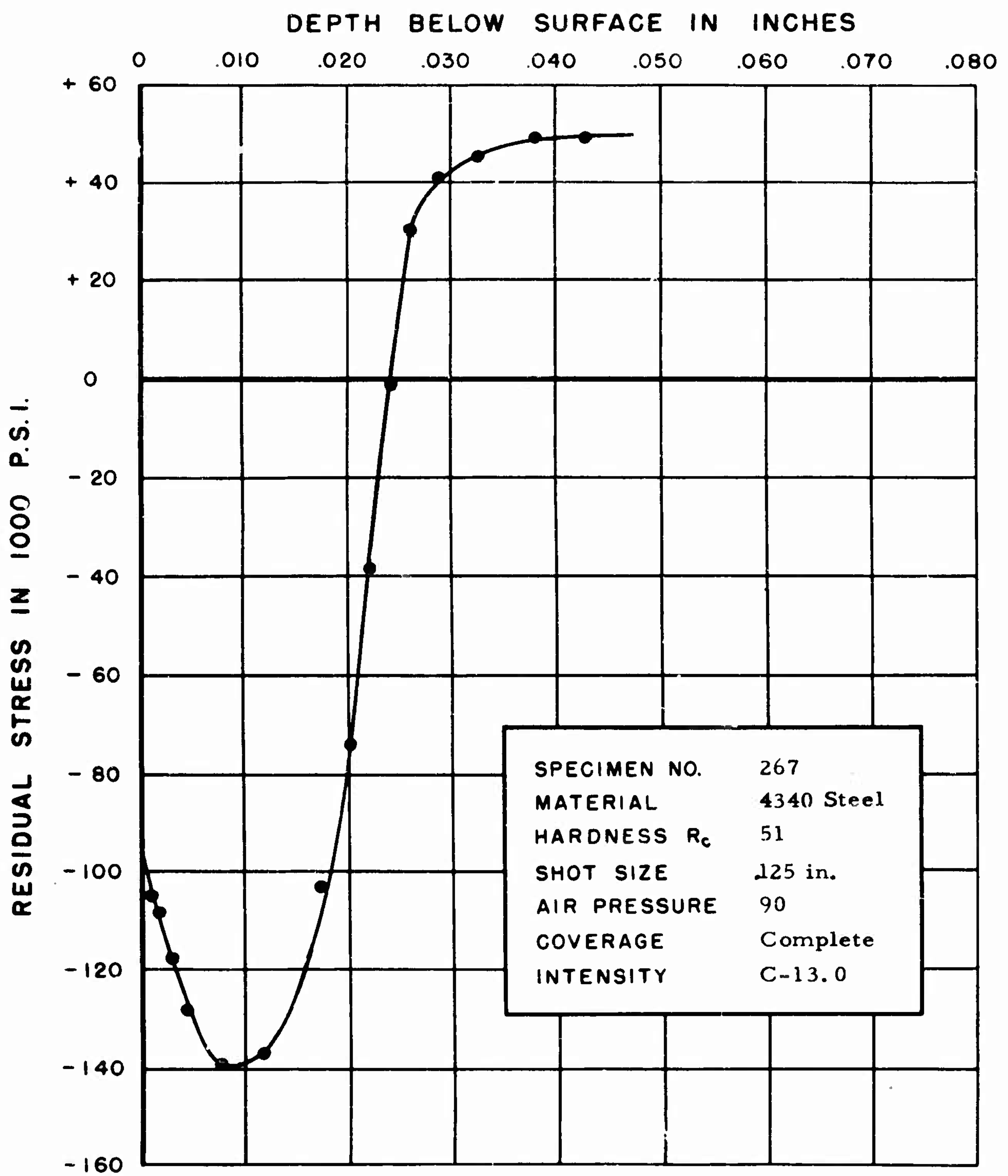


FIGURE 299. RESIDUAL STRESS DISTRIBUTION



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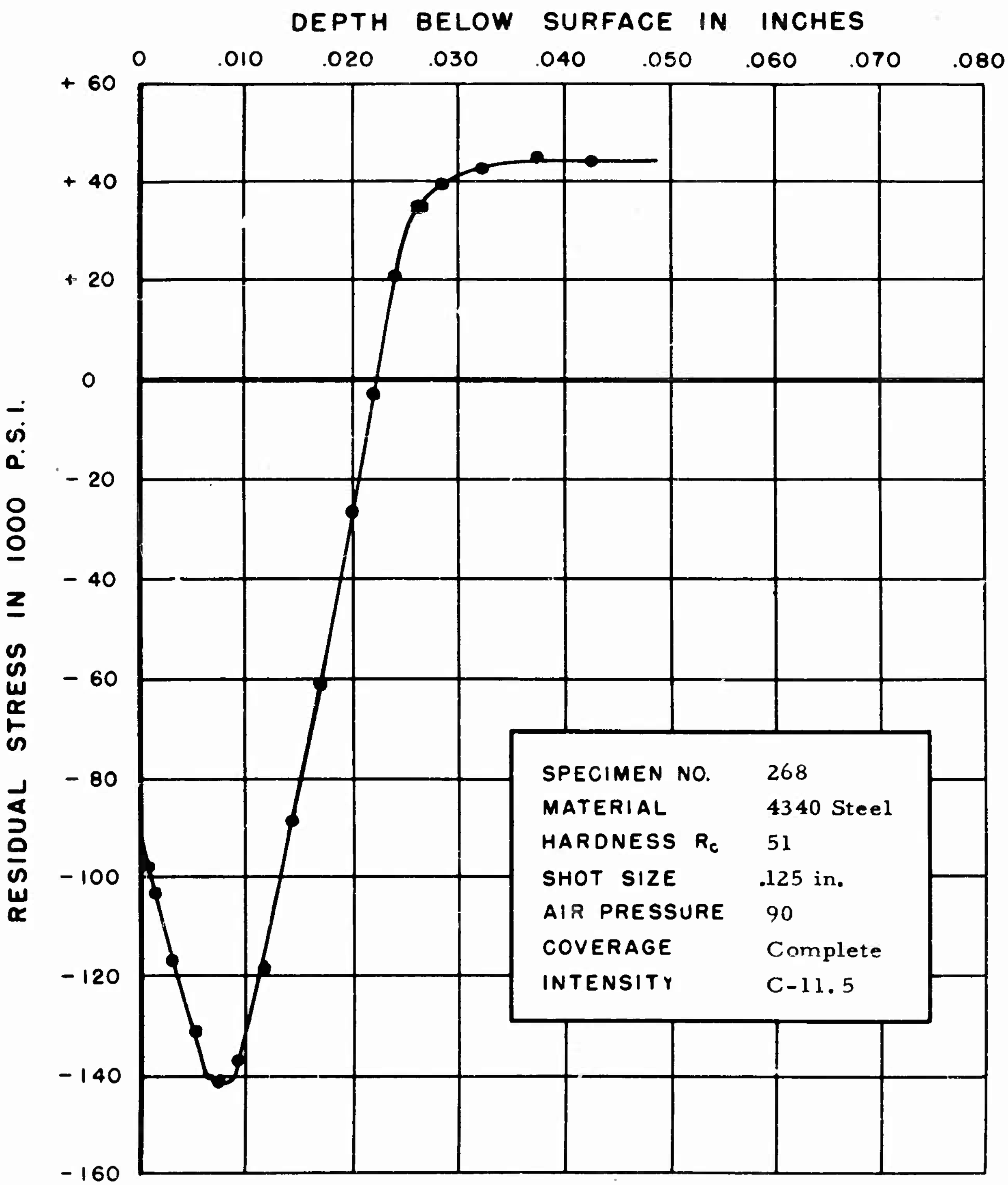

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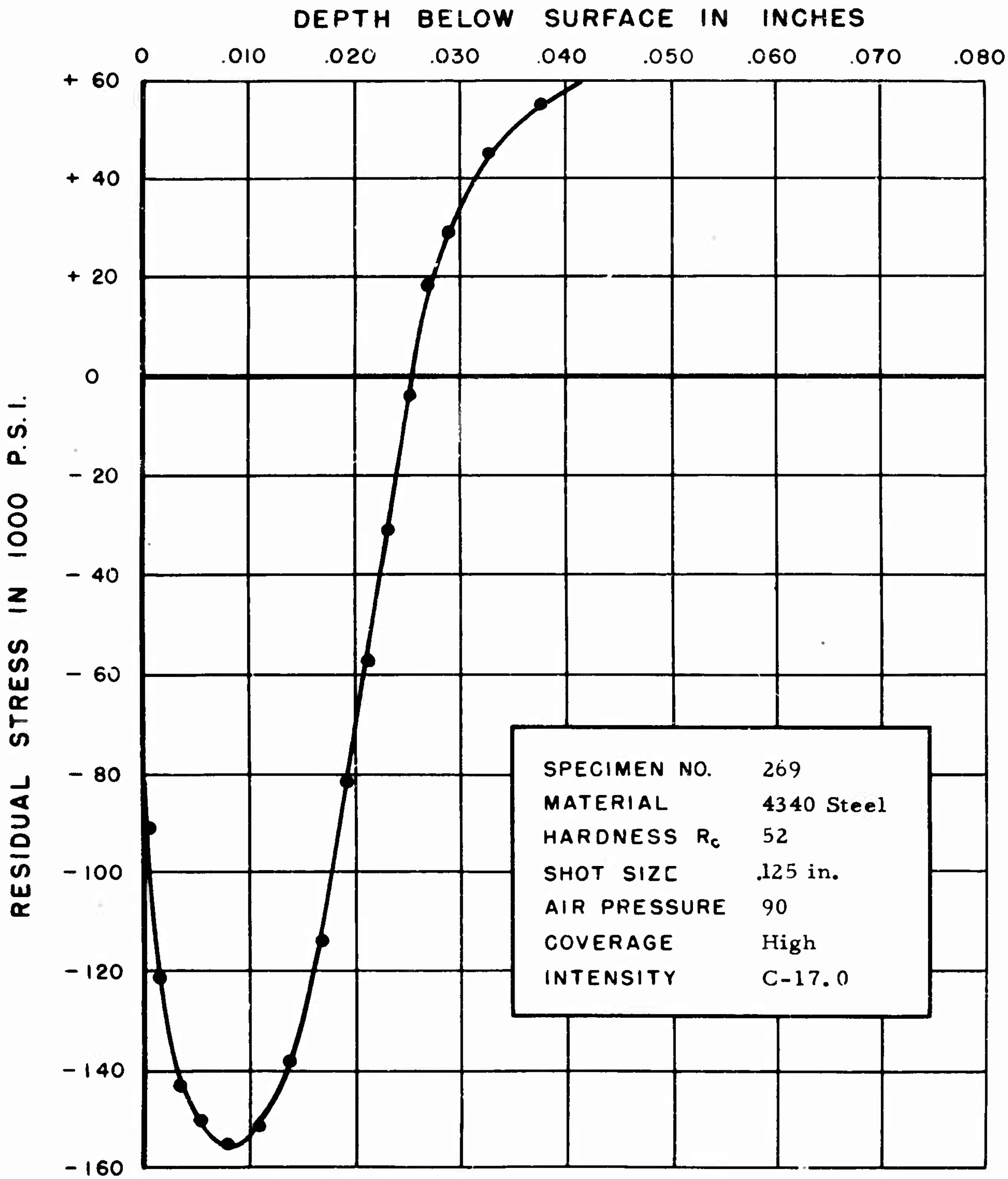

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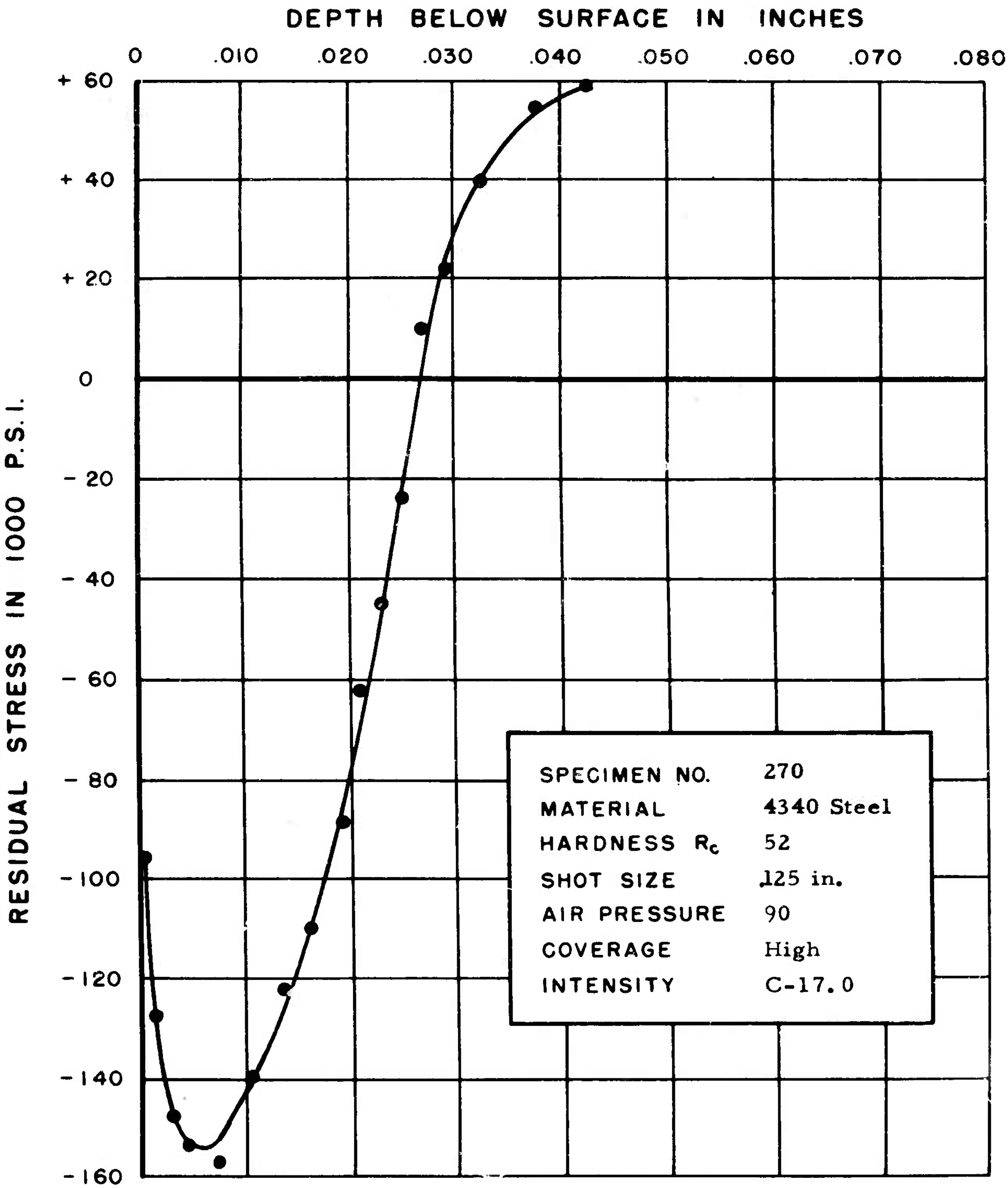


FIGURE 303. RESIDUAL STRESS DISTRIBUTION

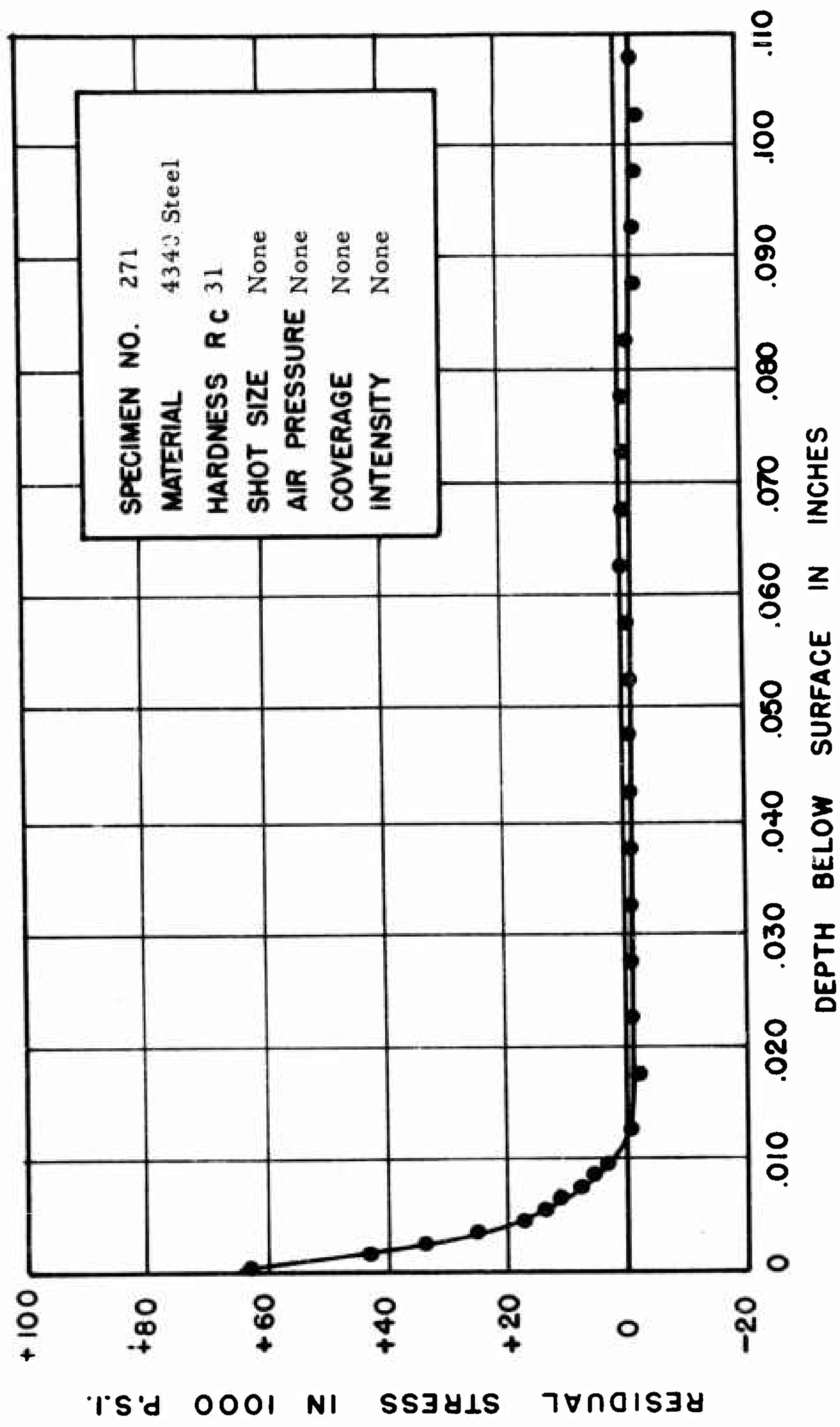


FIGURE 304. RESIDUAL STRESS DISTRIBUTION

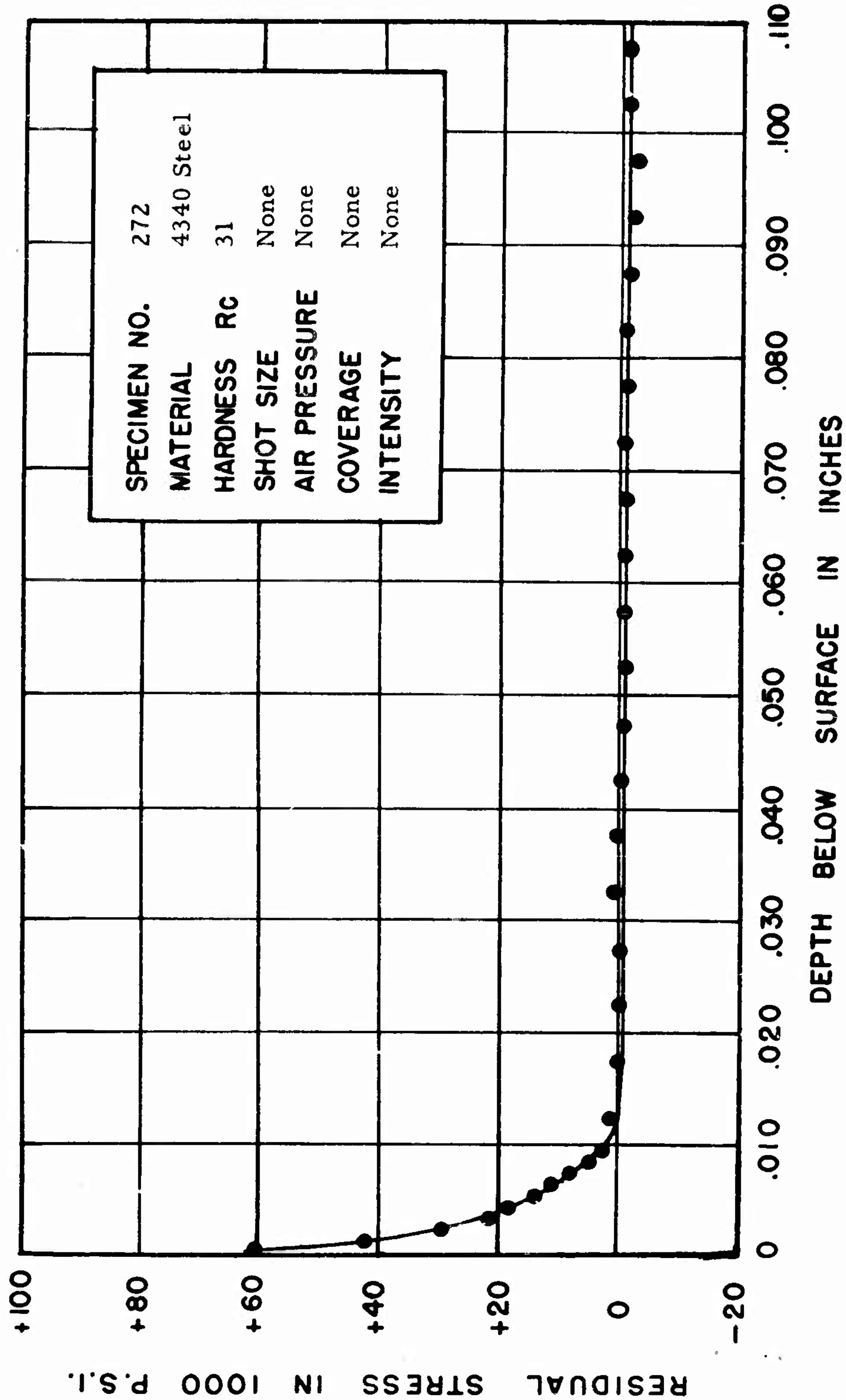
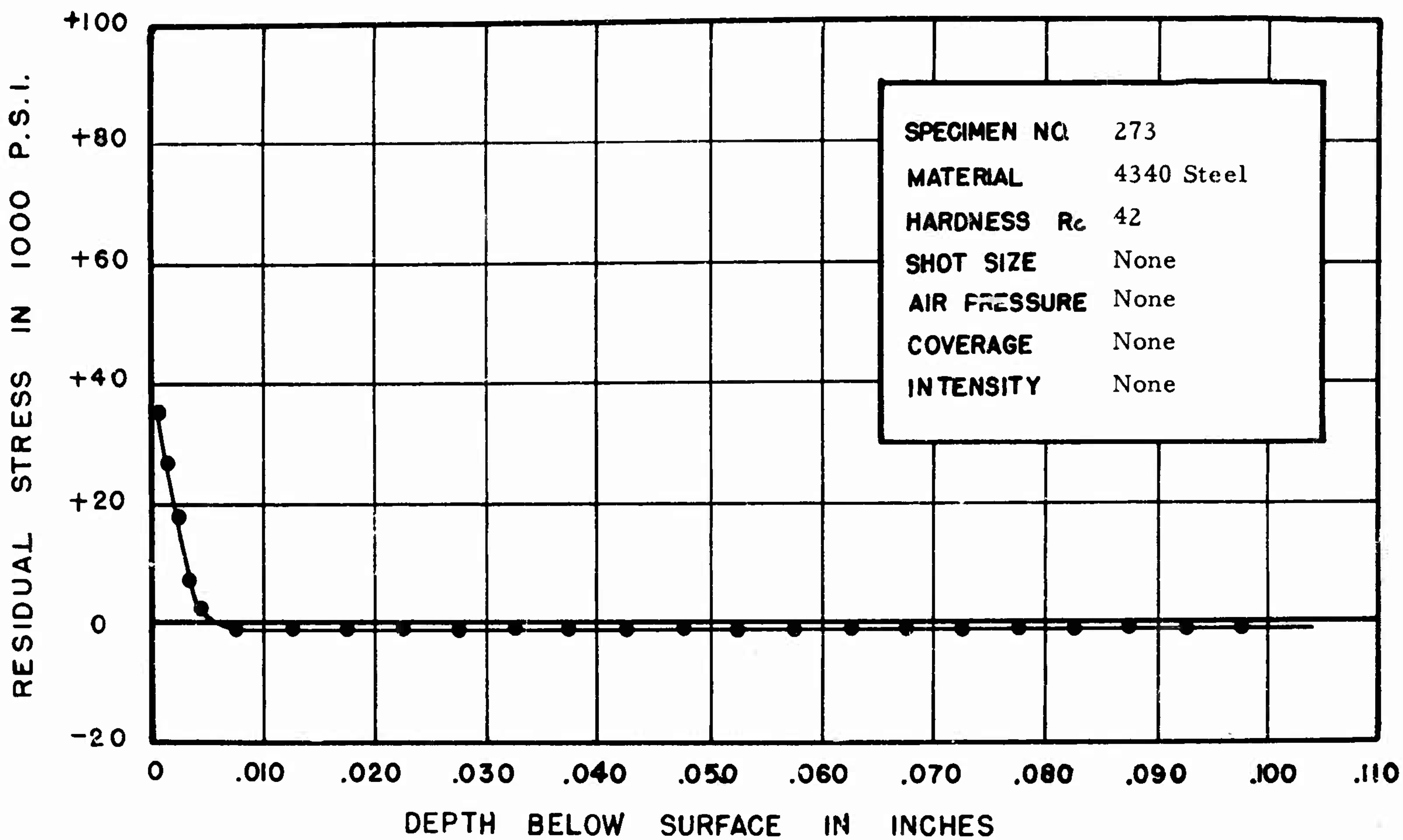


FIGURE 305. RESIDUAL STRESS DISTRIBUTION



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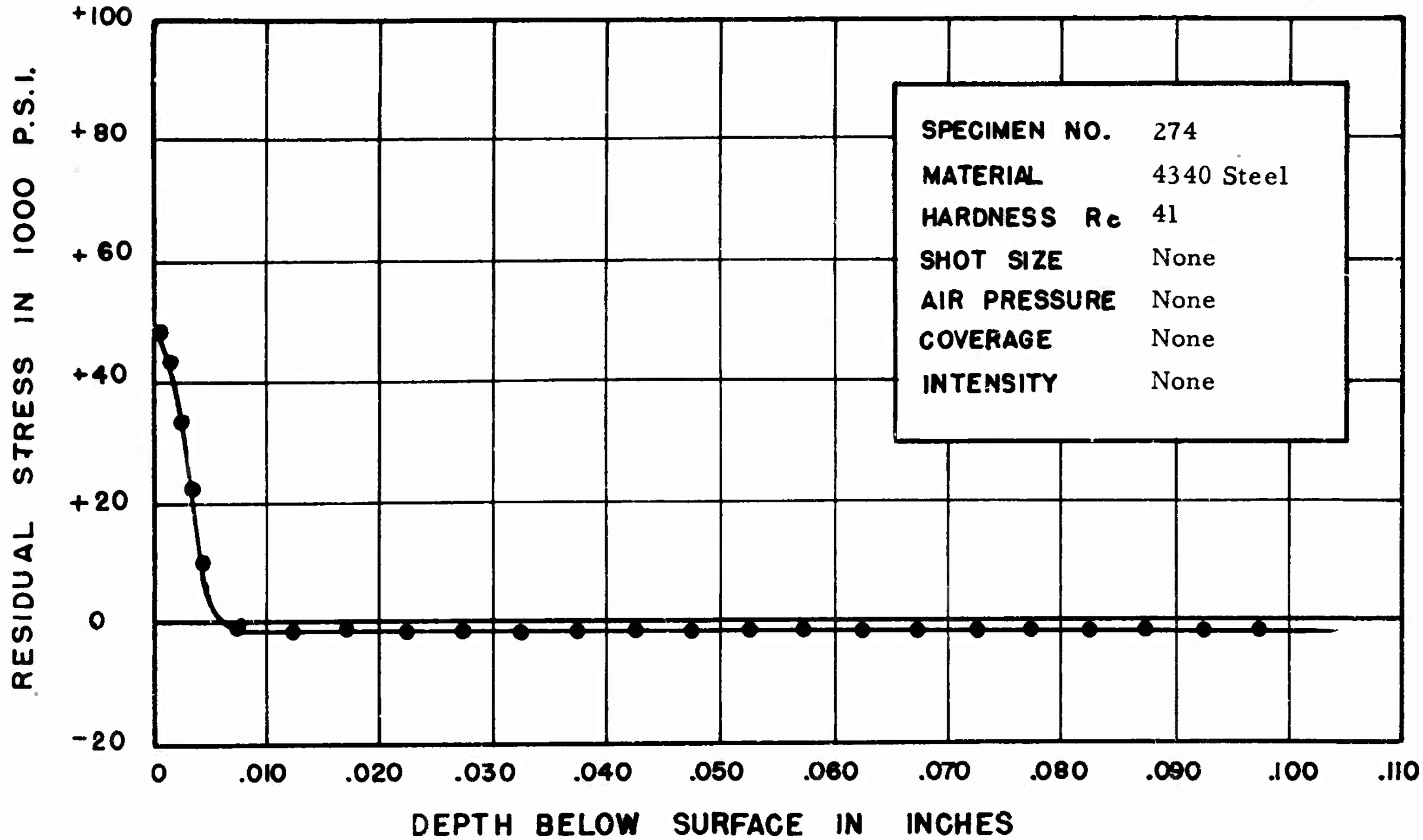


FIGURE 307. RESIDUAL STRESS DISTRIBUTION

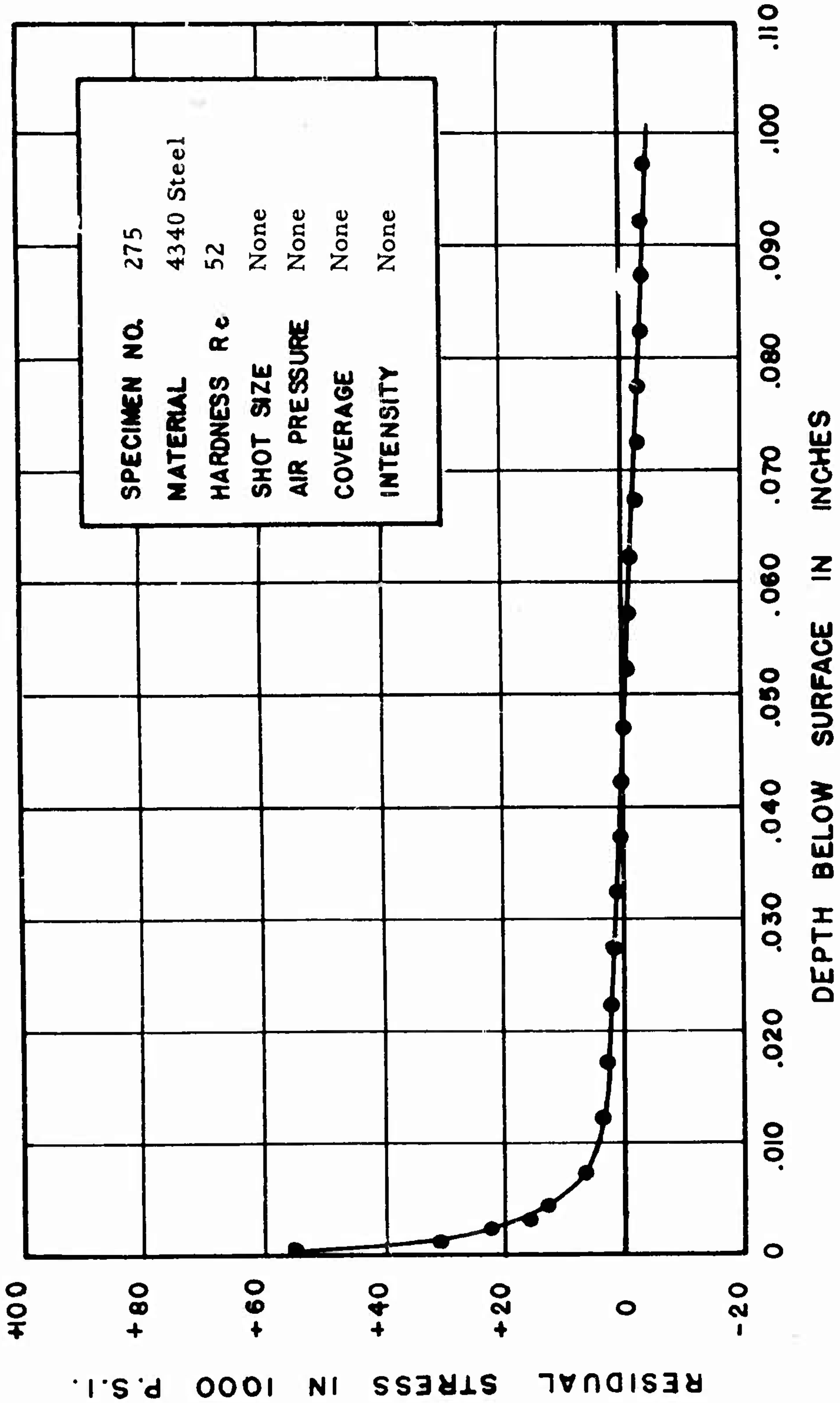


FIGURE 308. RESIDUAL STRESS DISTRIBUTION

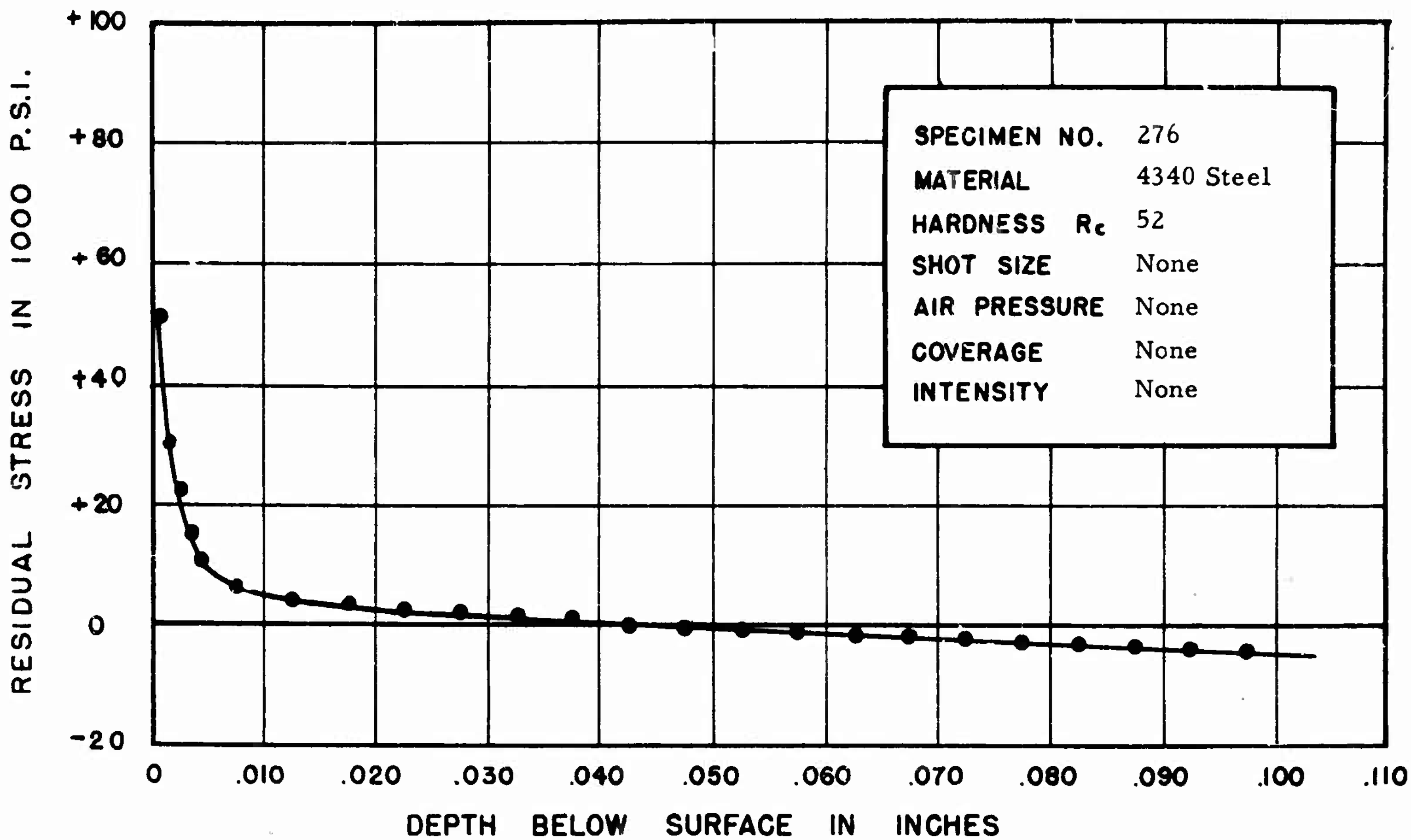
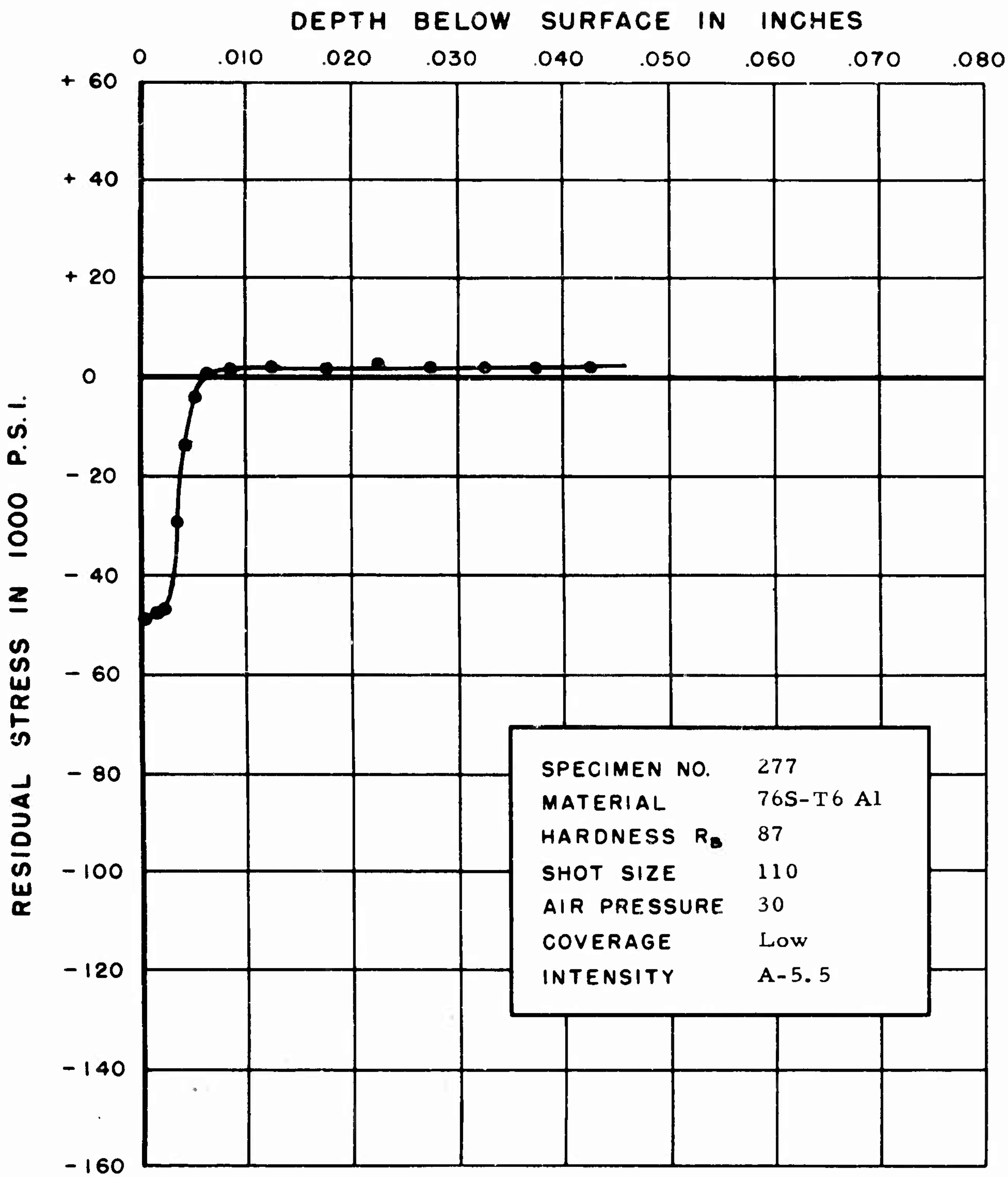


FIGURE 309. RESIDUAL STRESS DISTRIBUTION



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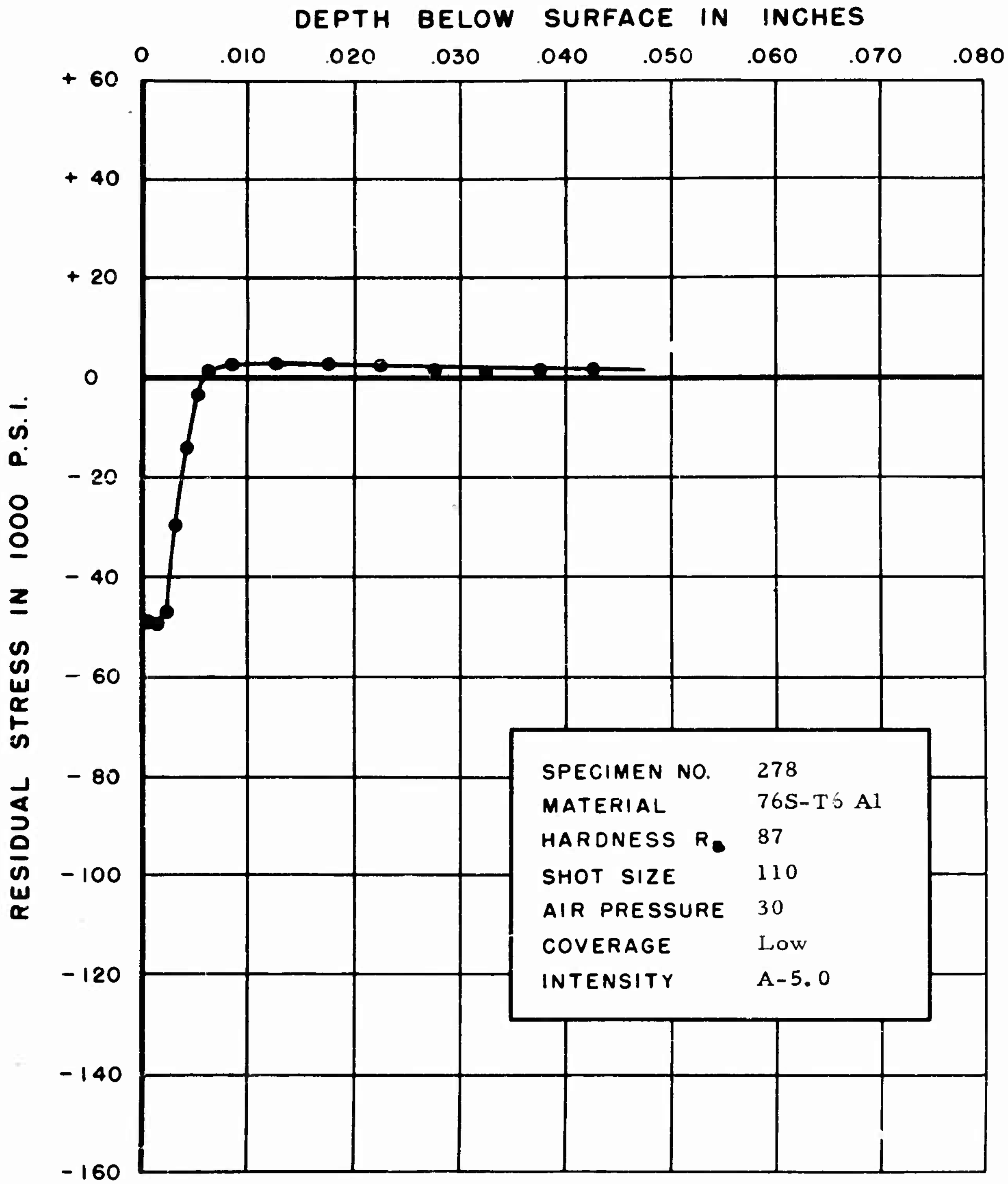

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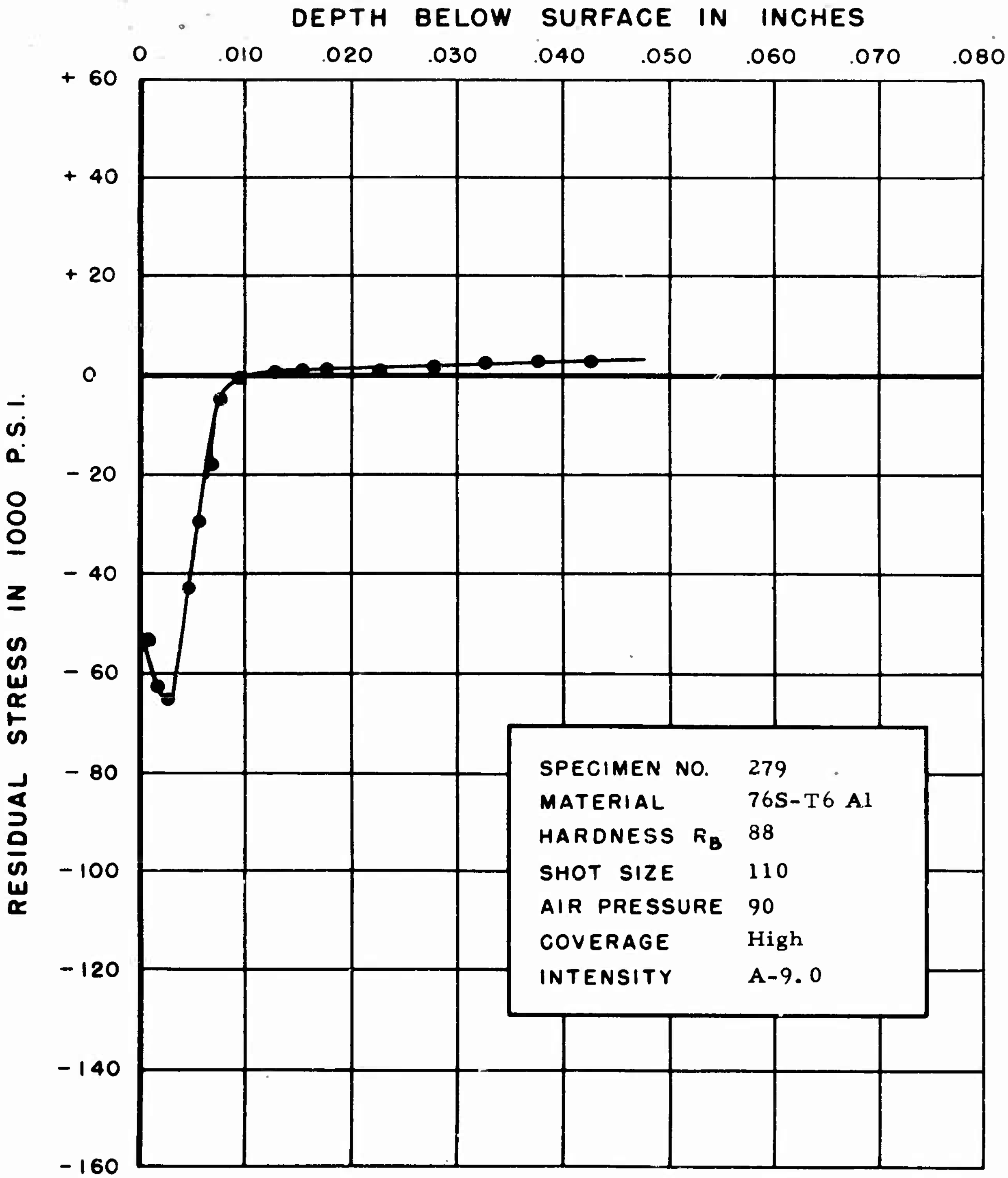

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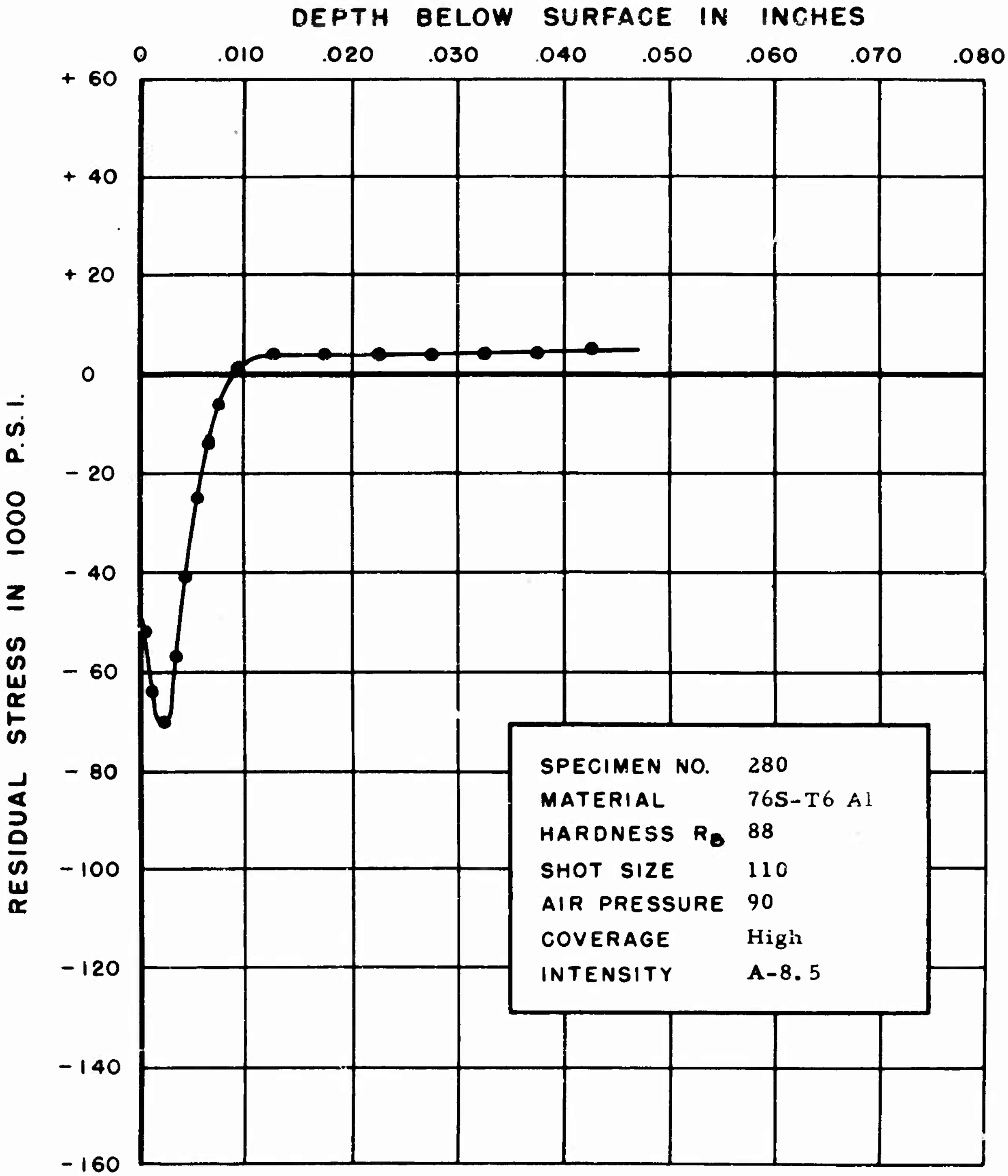

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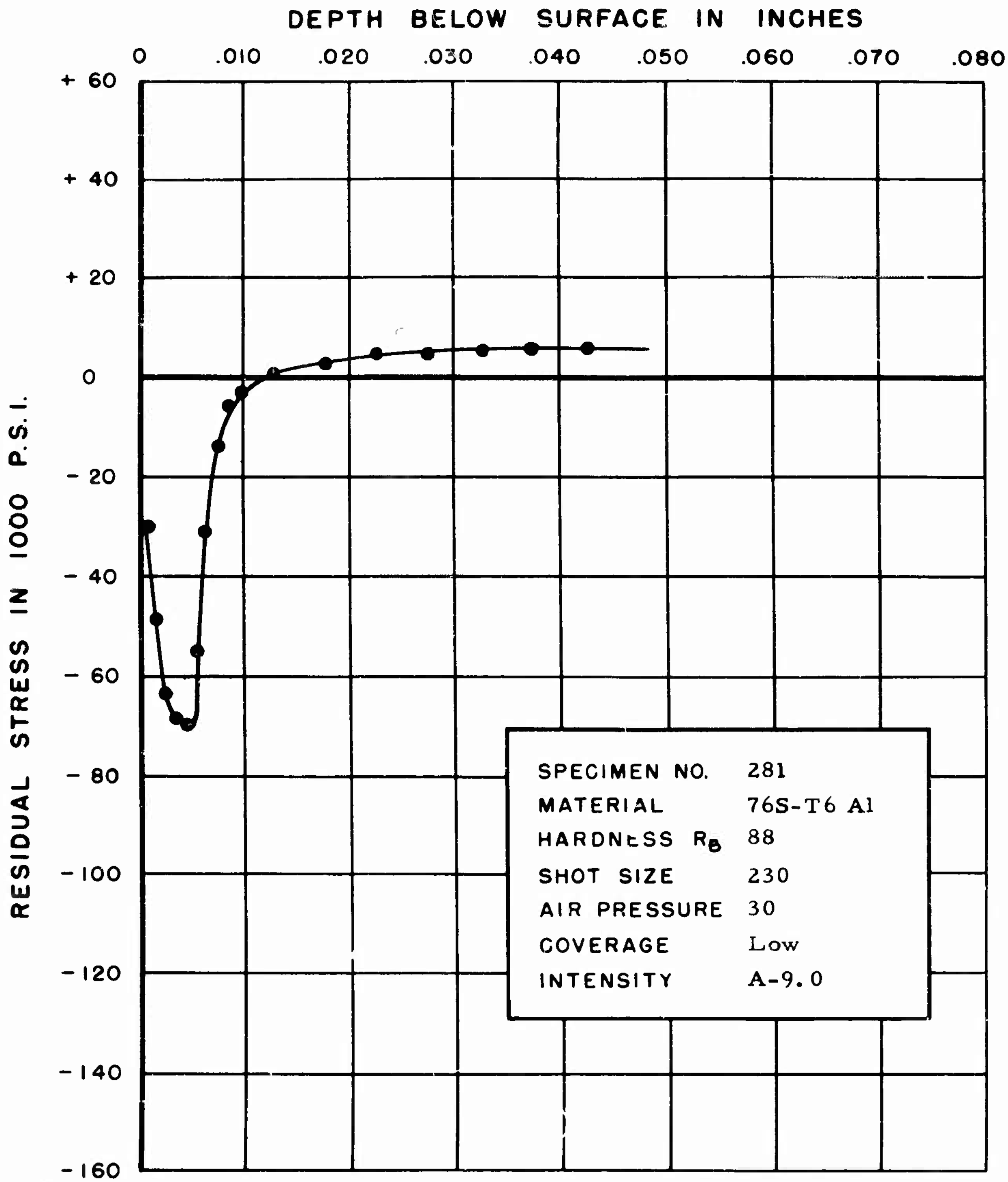

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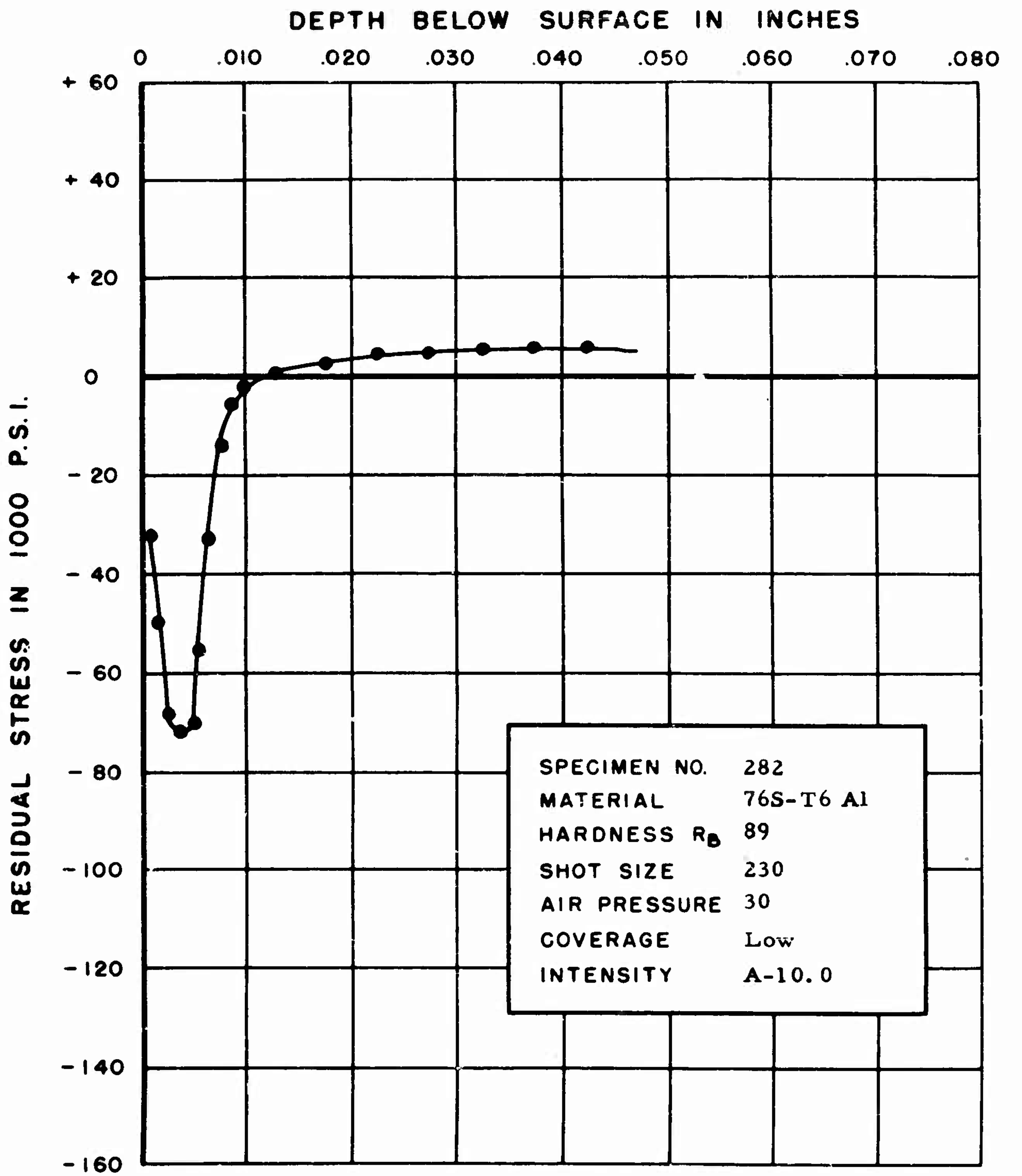

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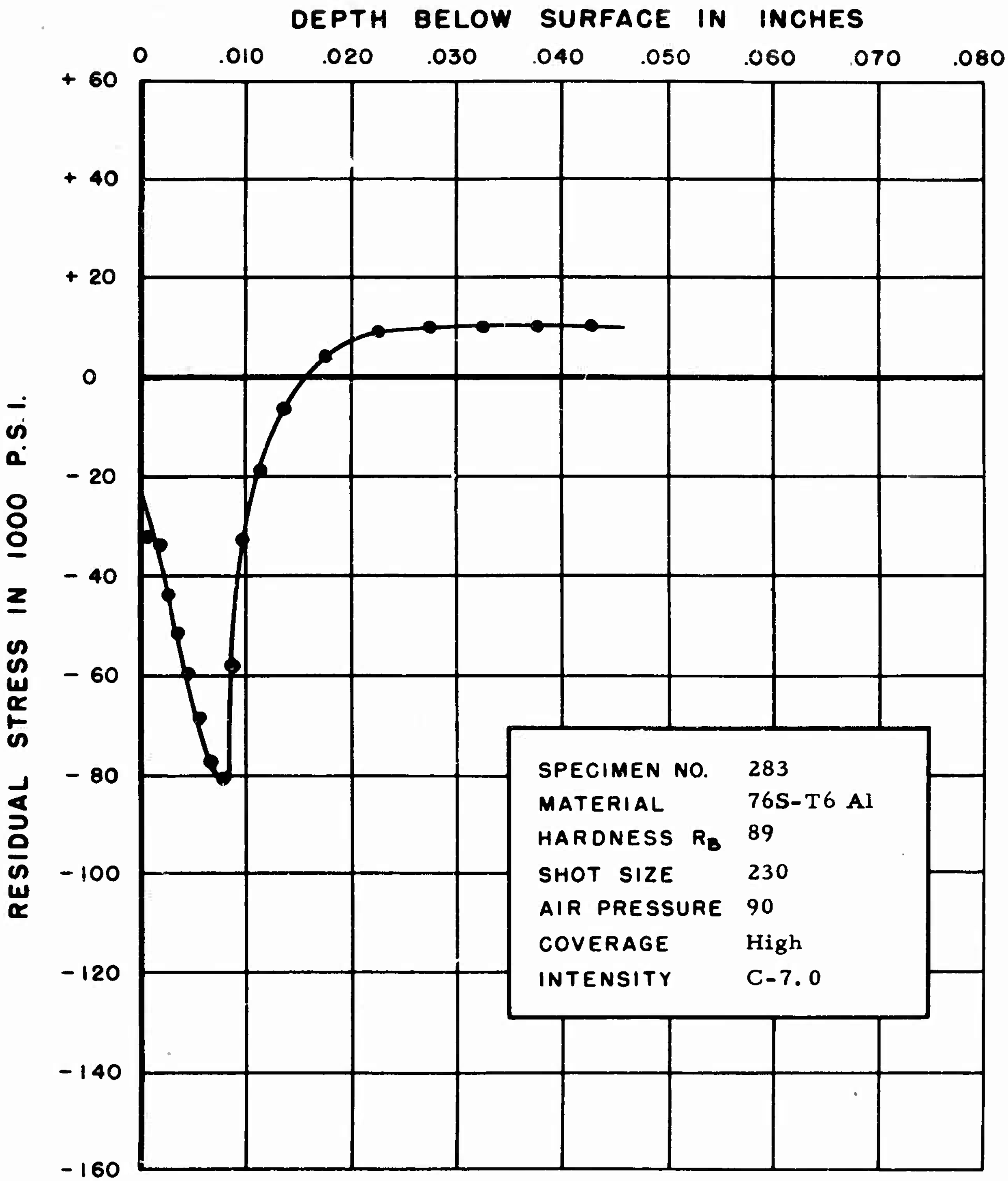

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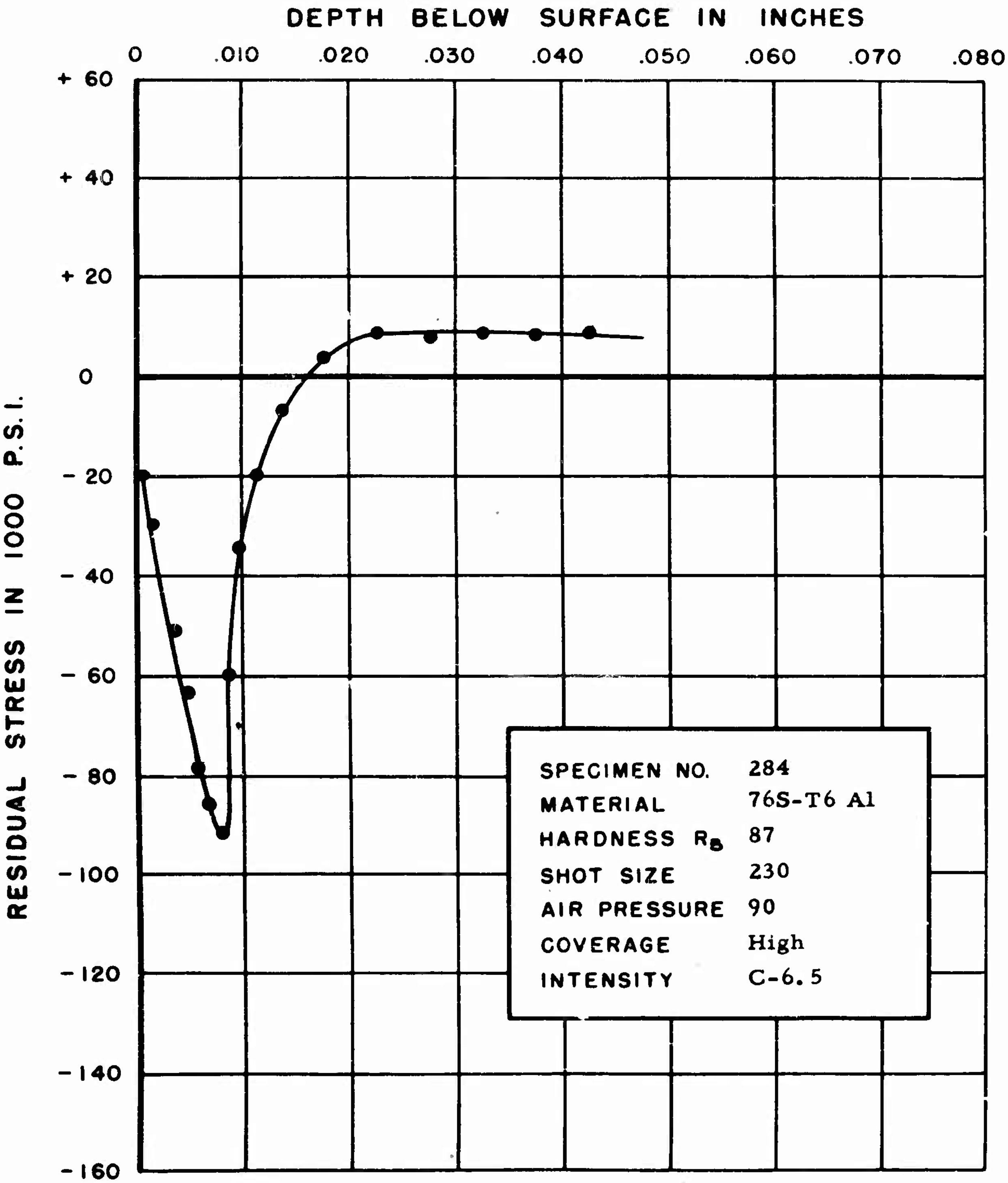

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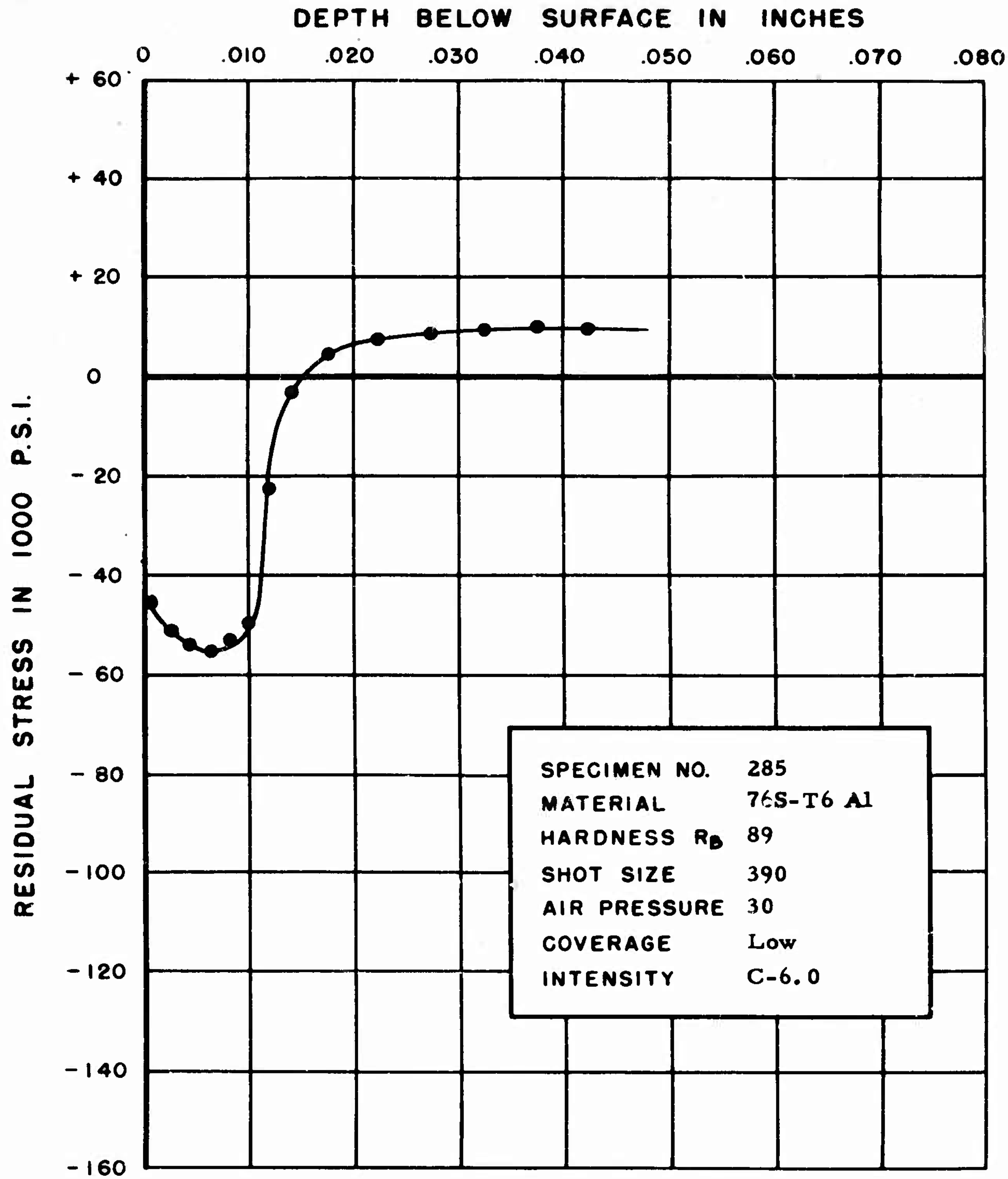

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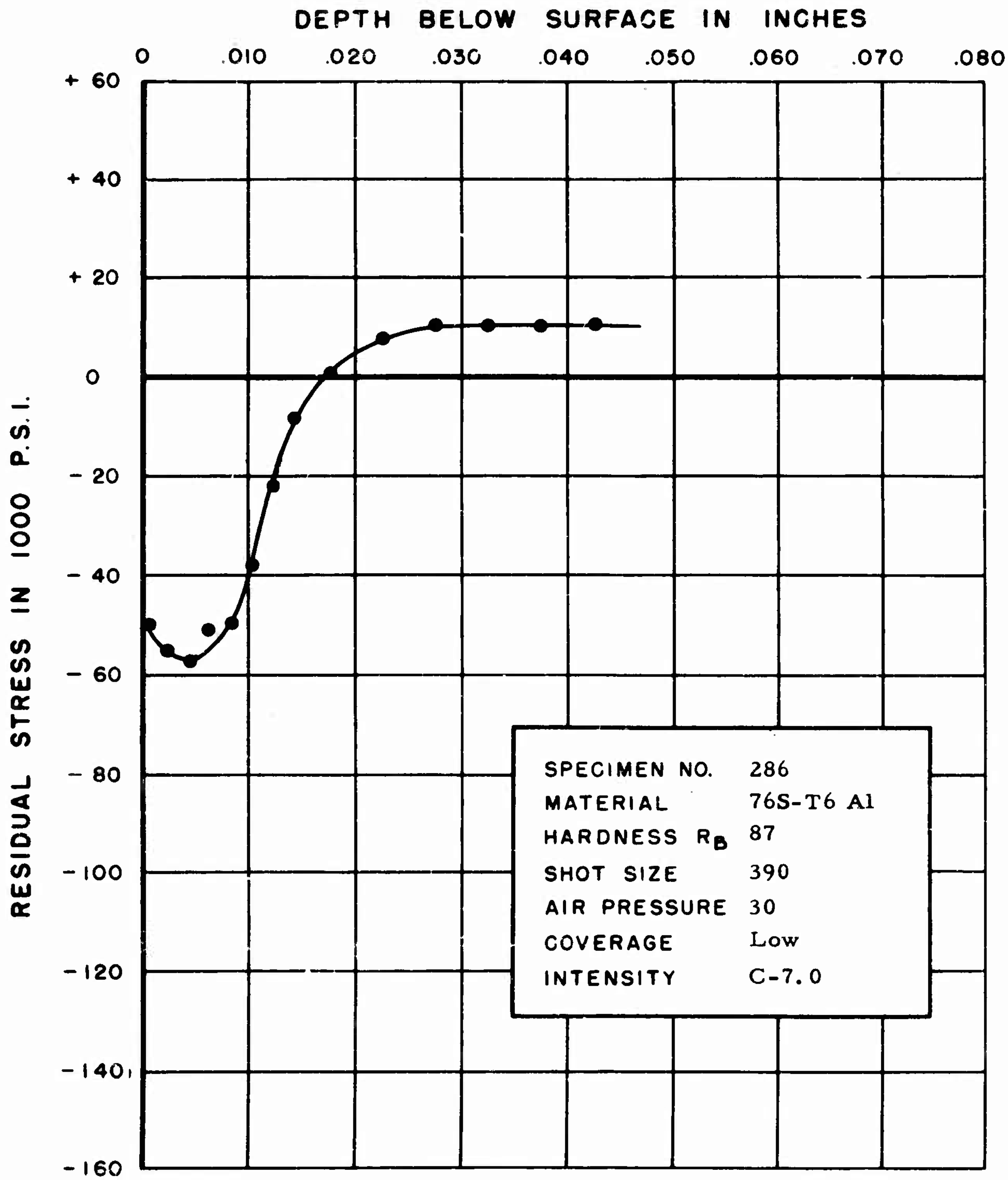

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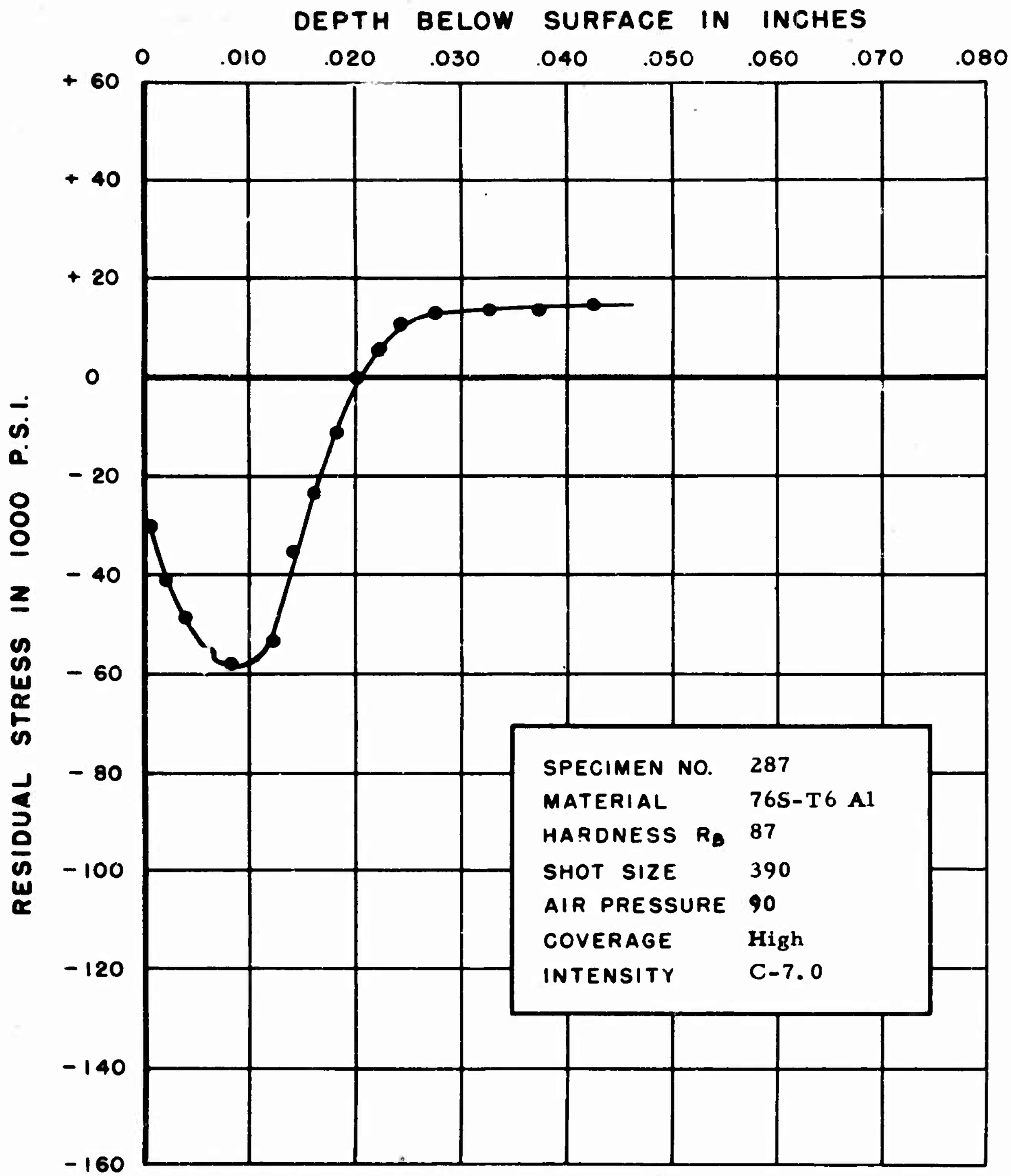

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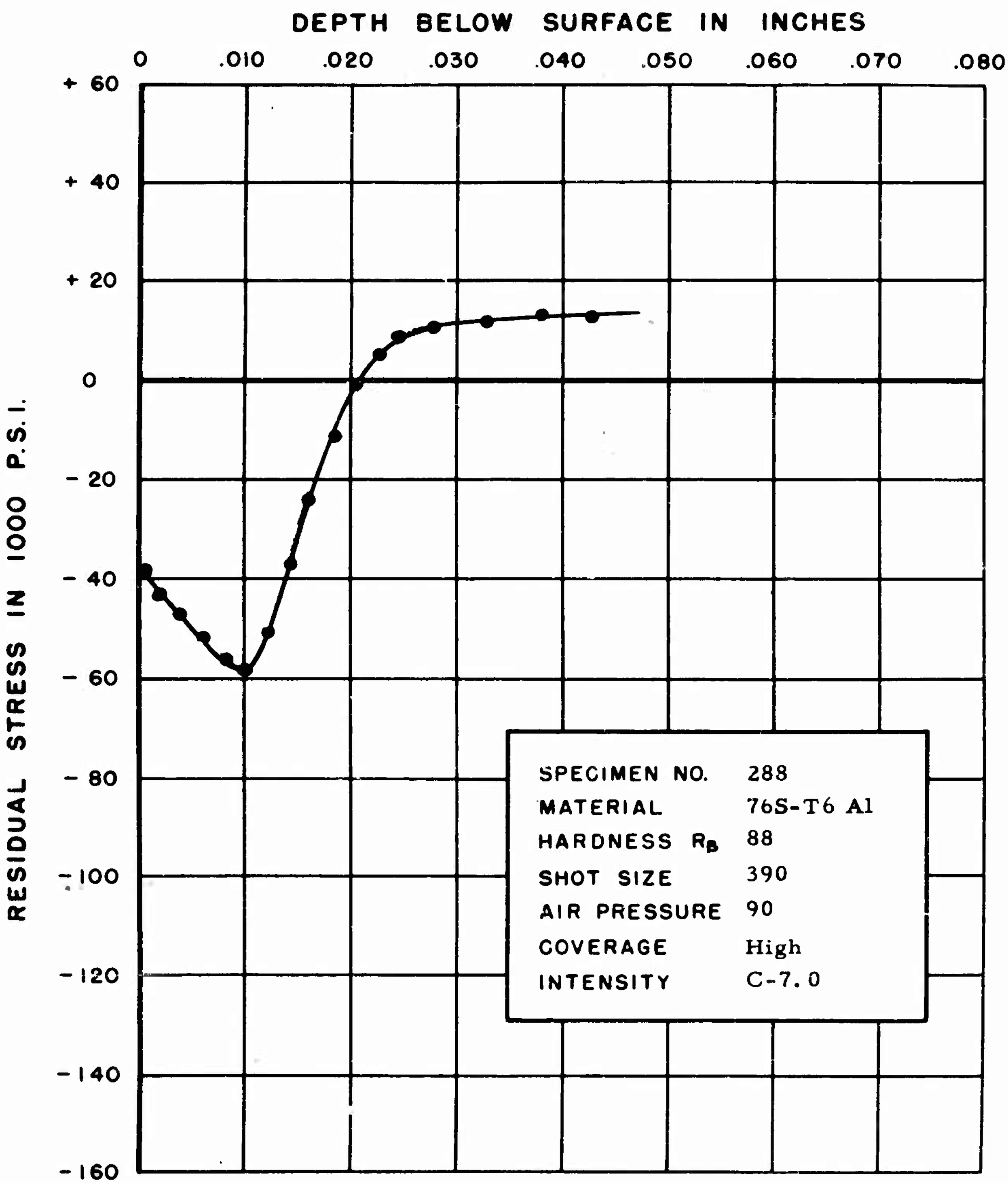

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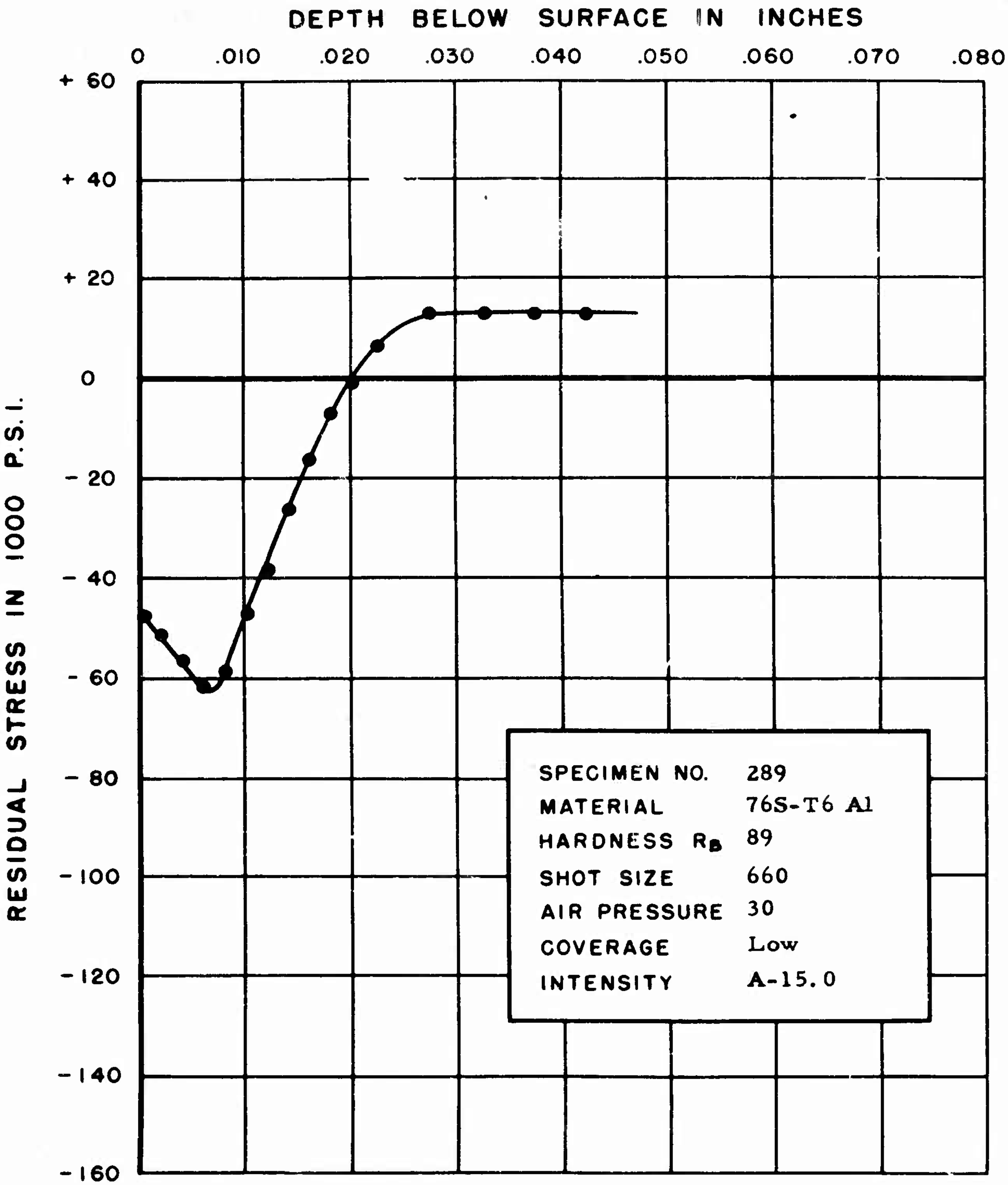

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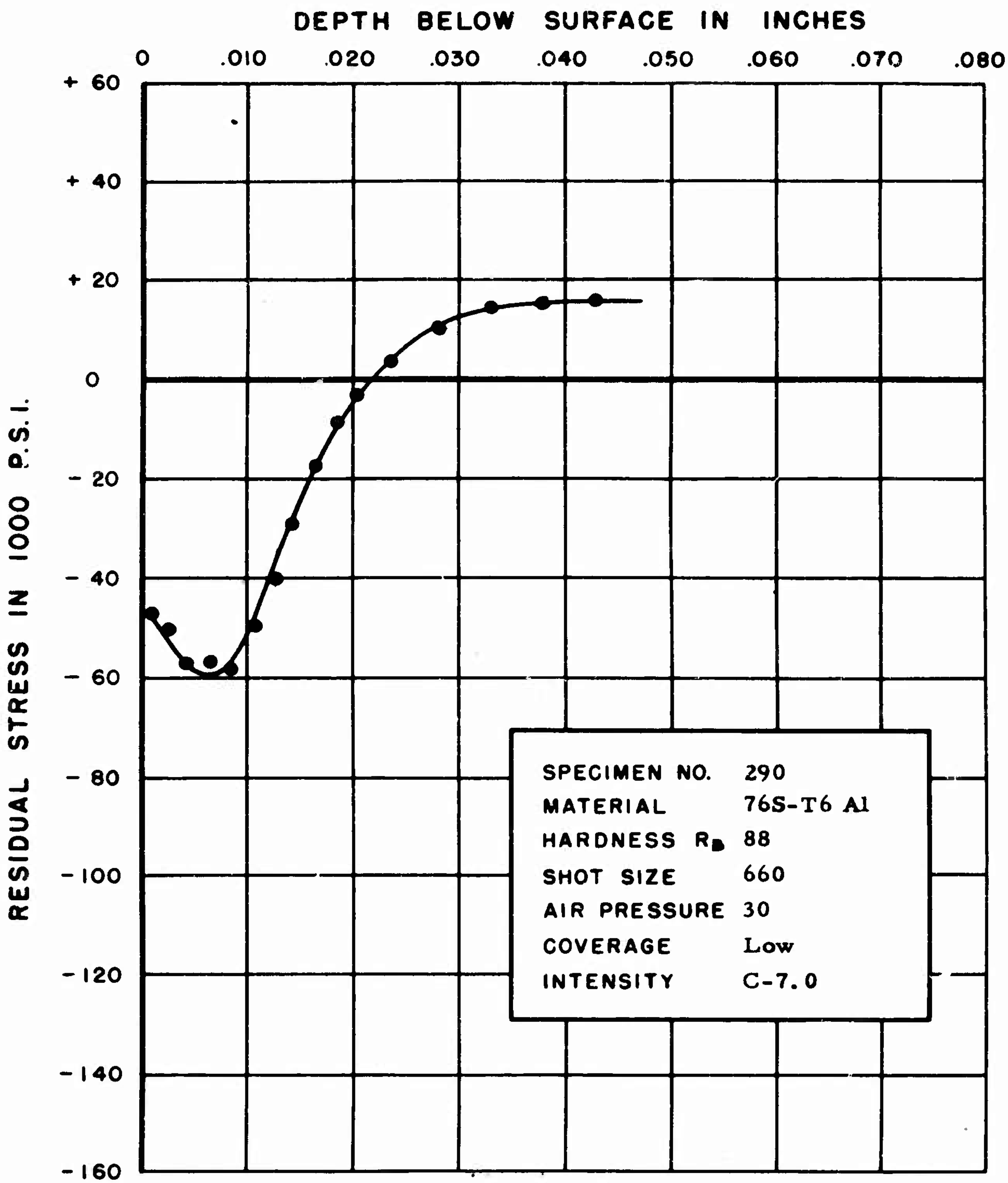

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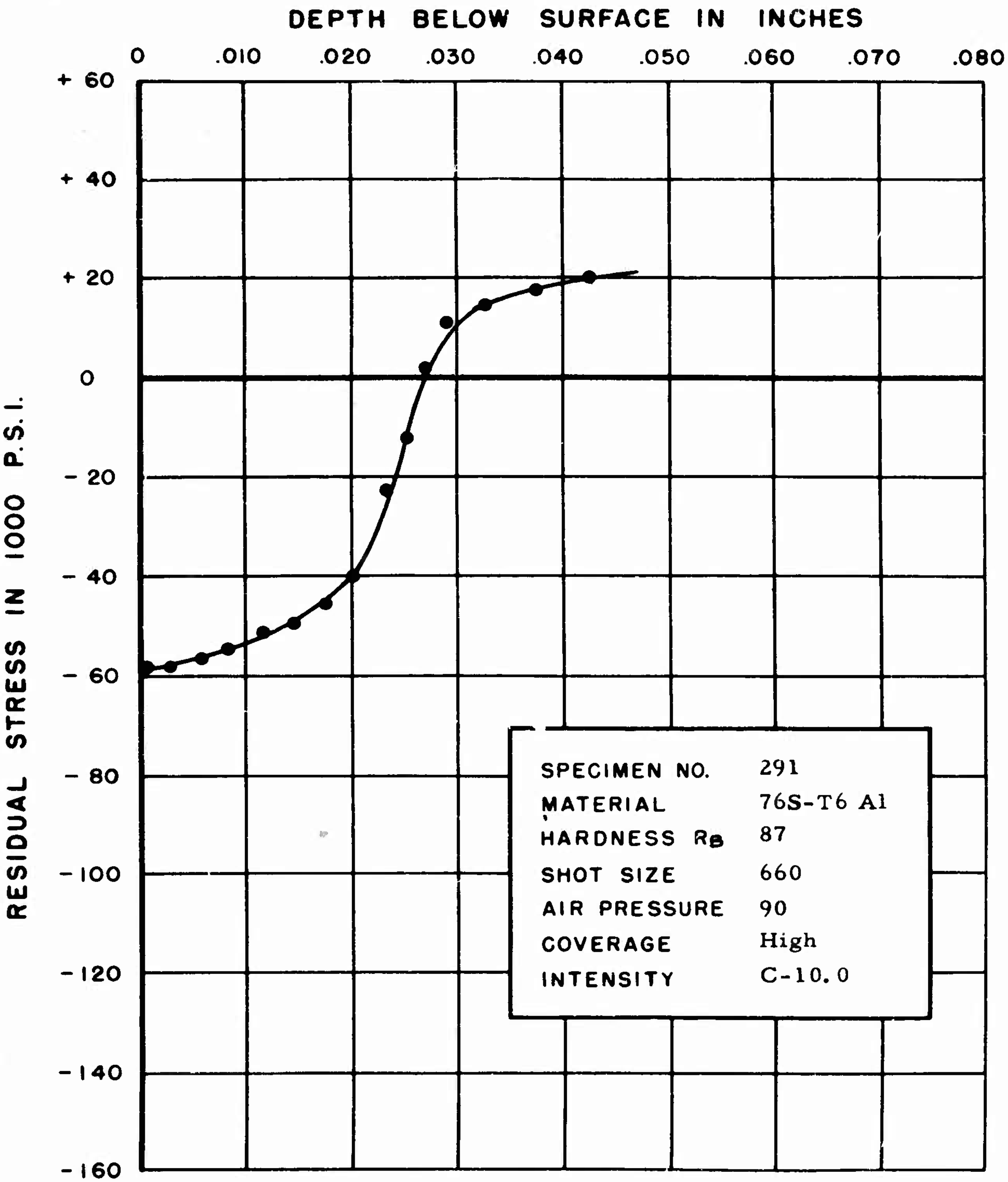

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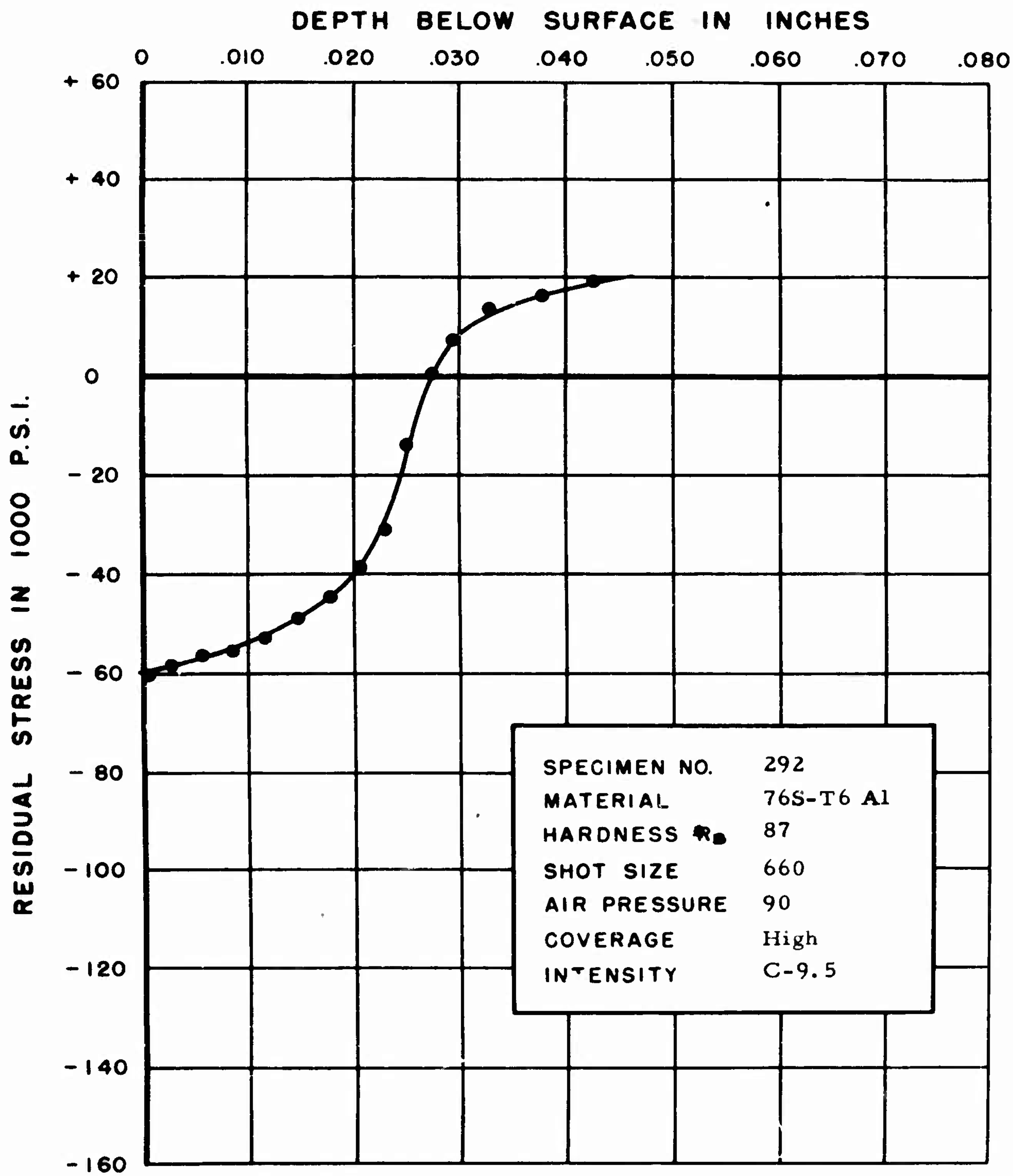

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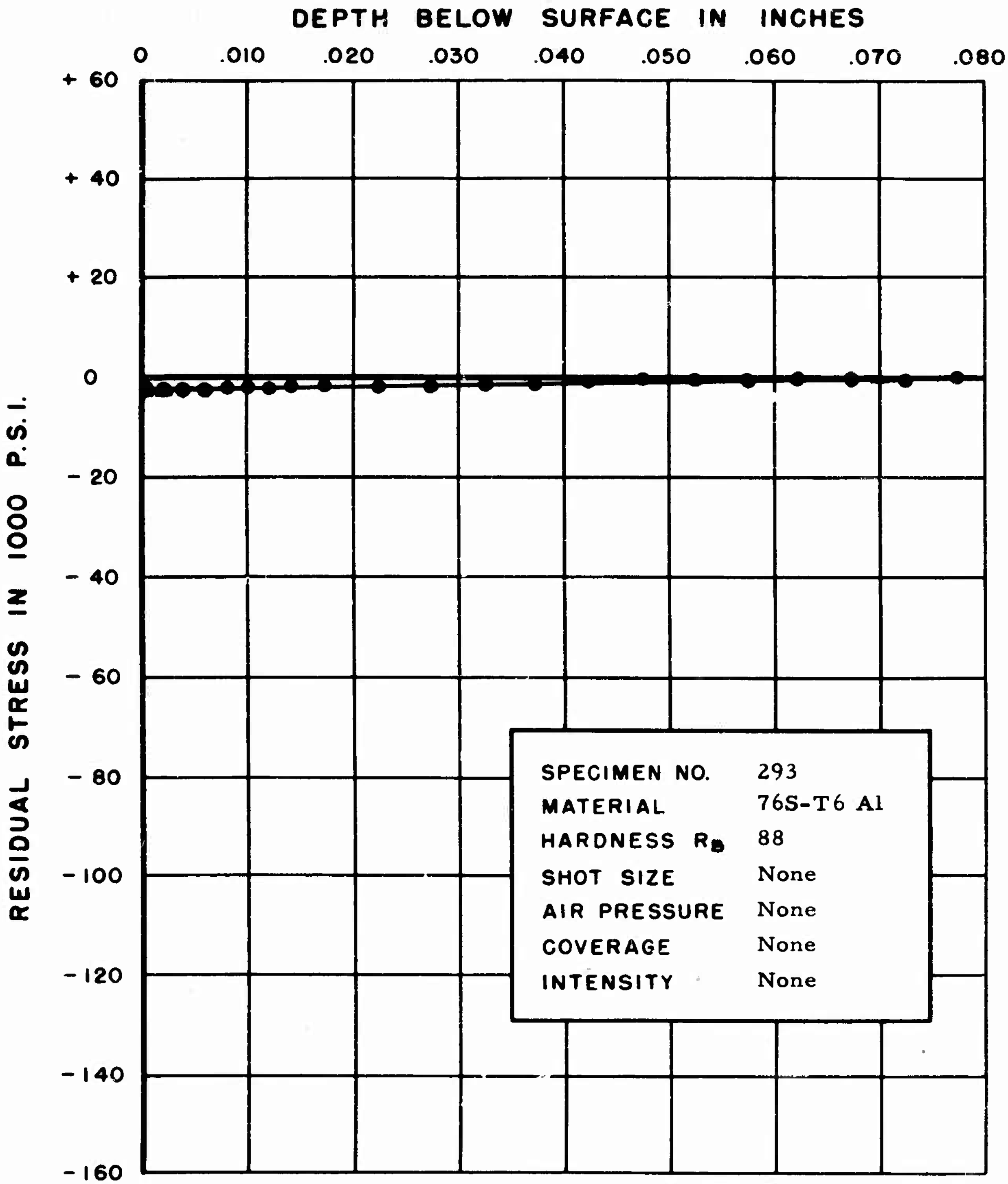

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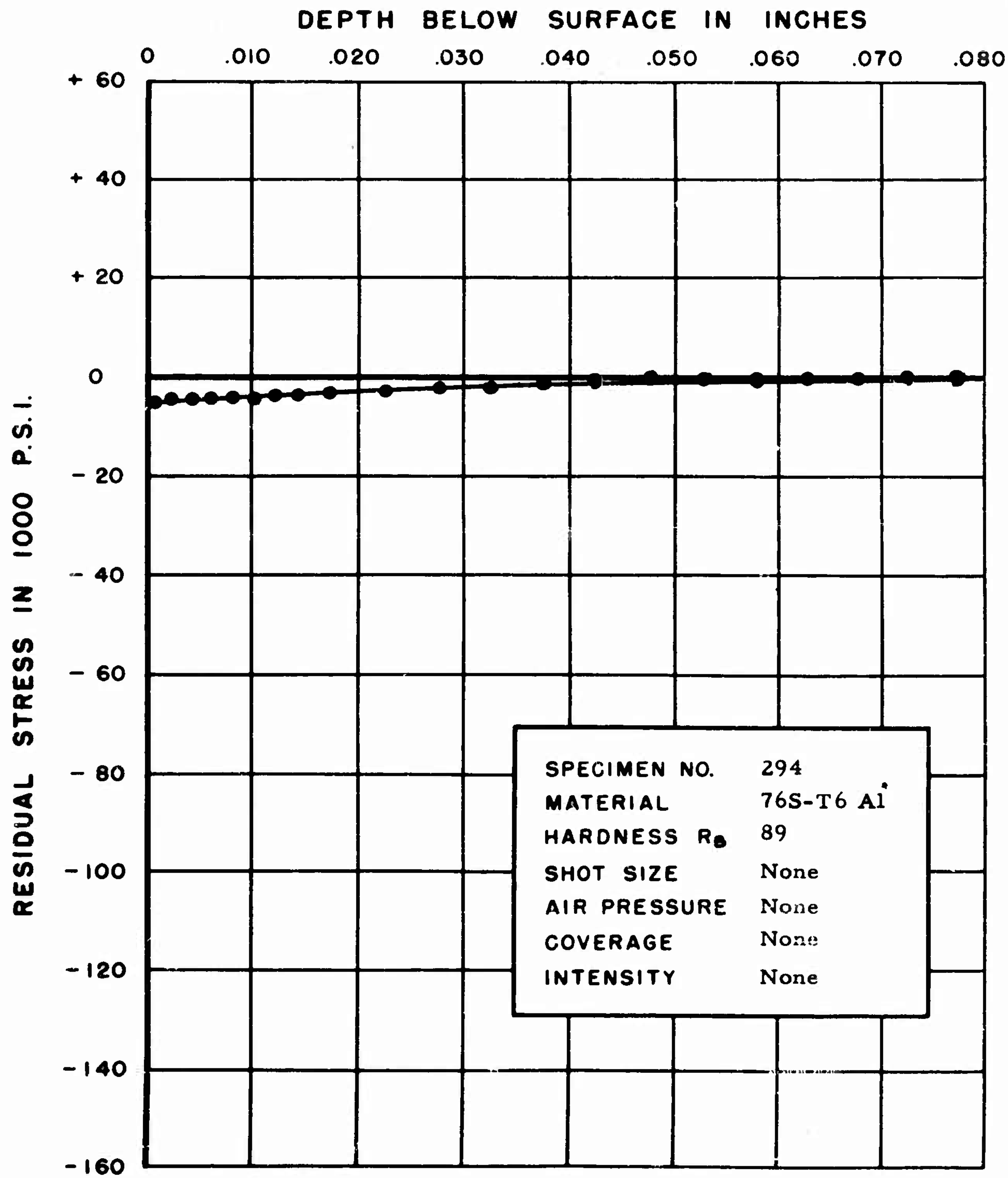

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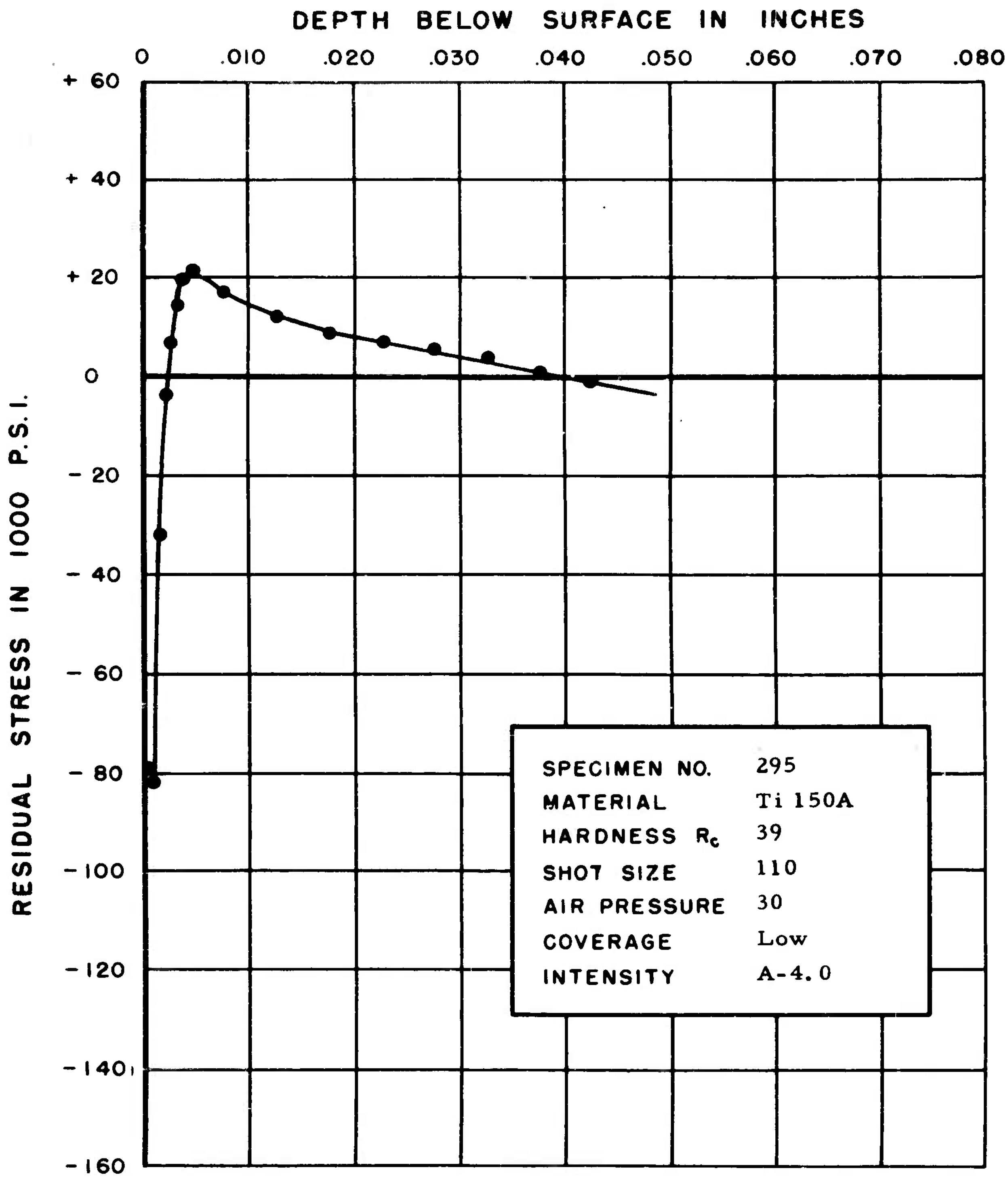

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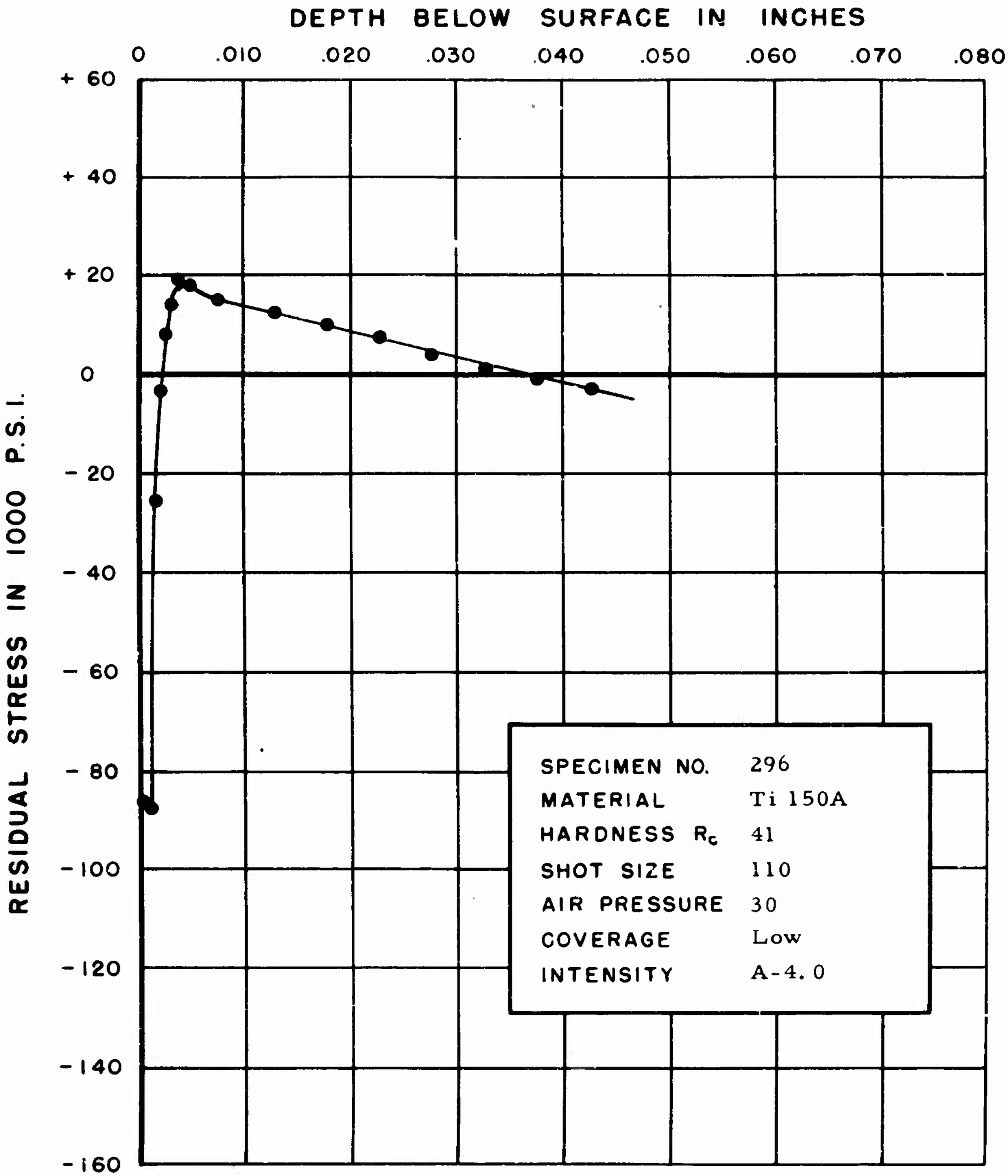

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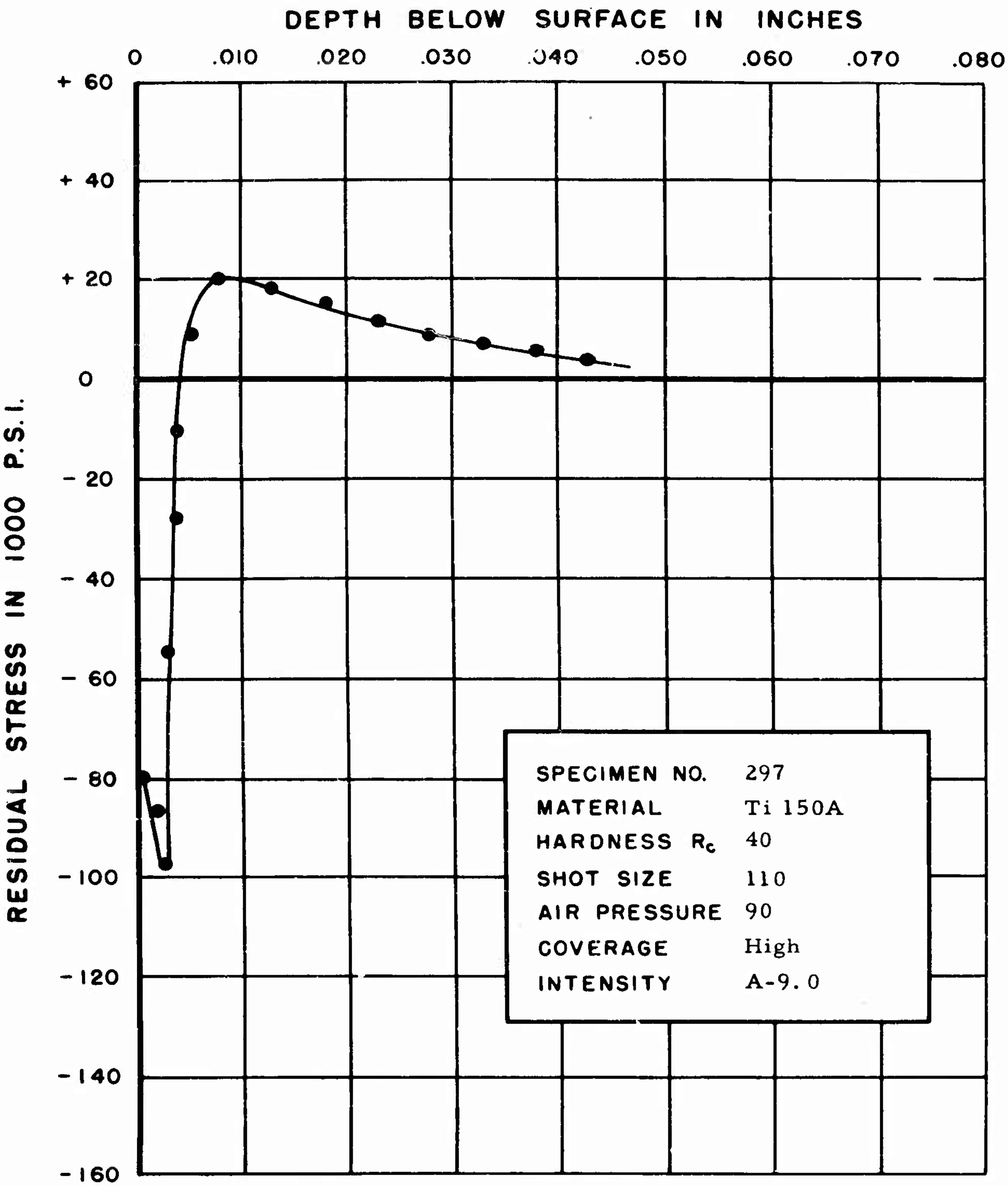

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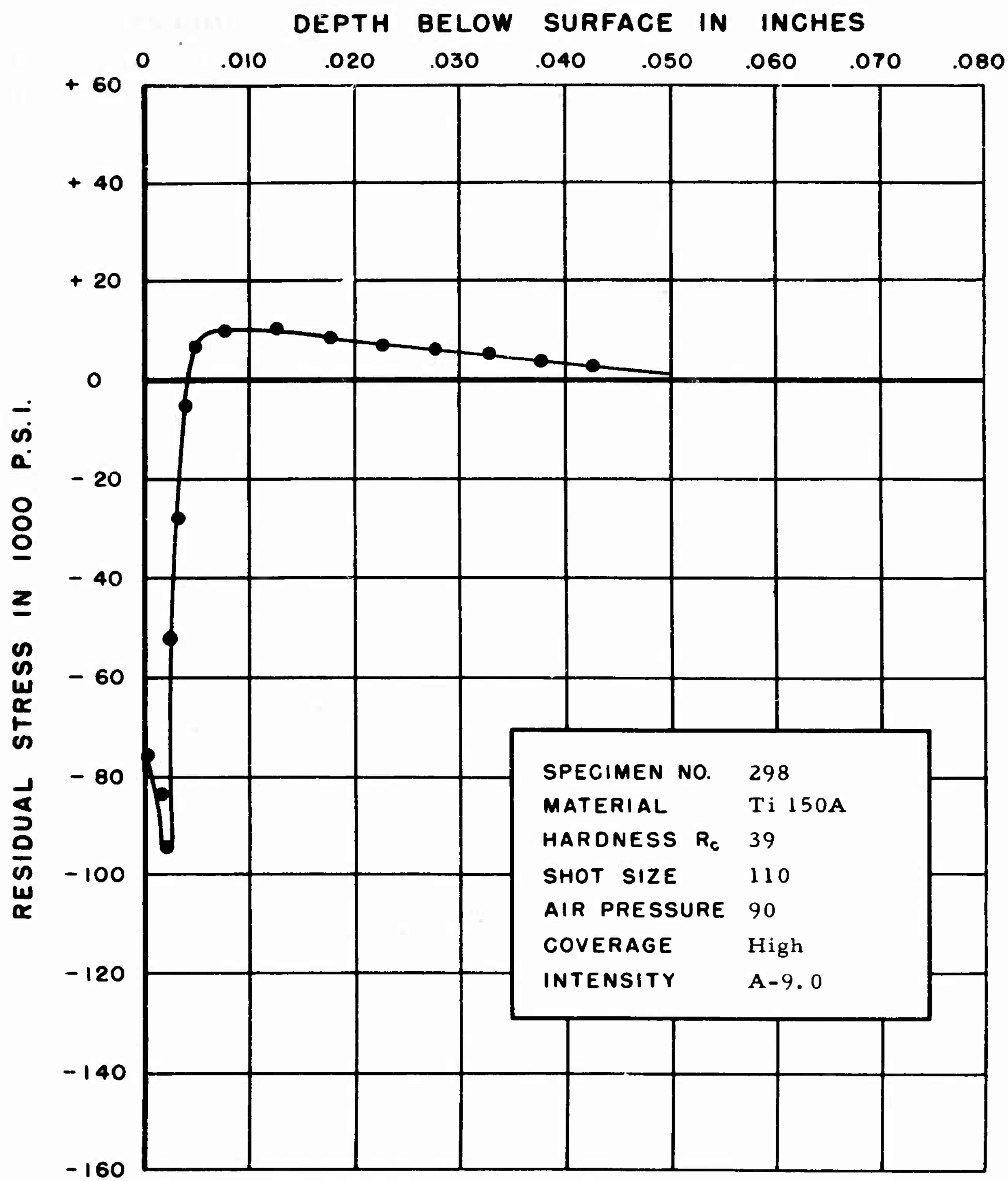

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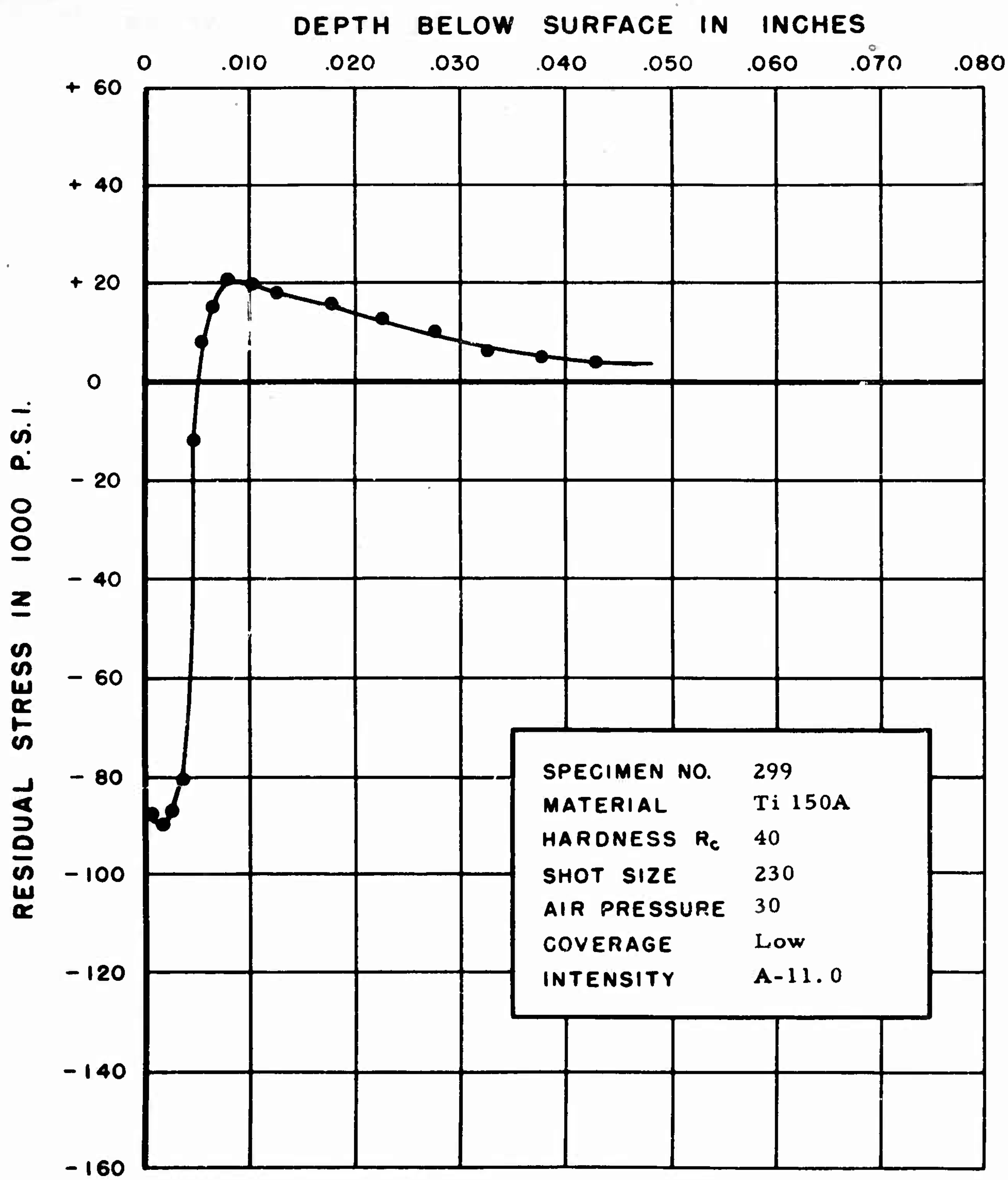

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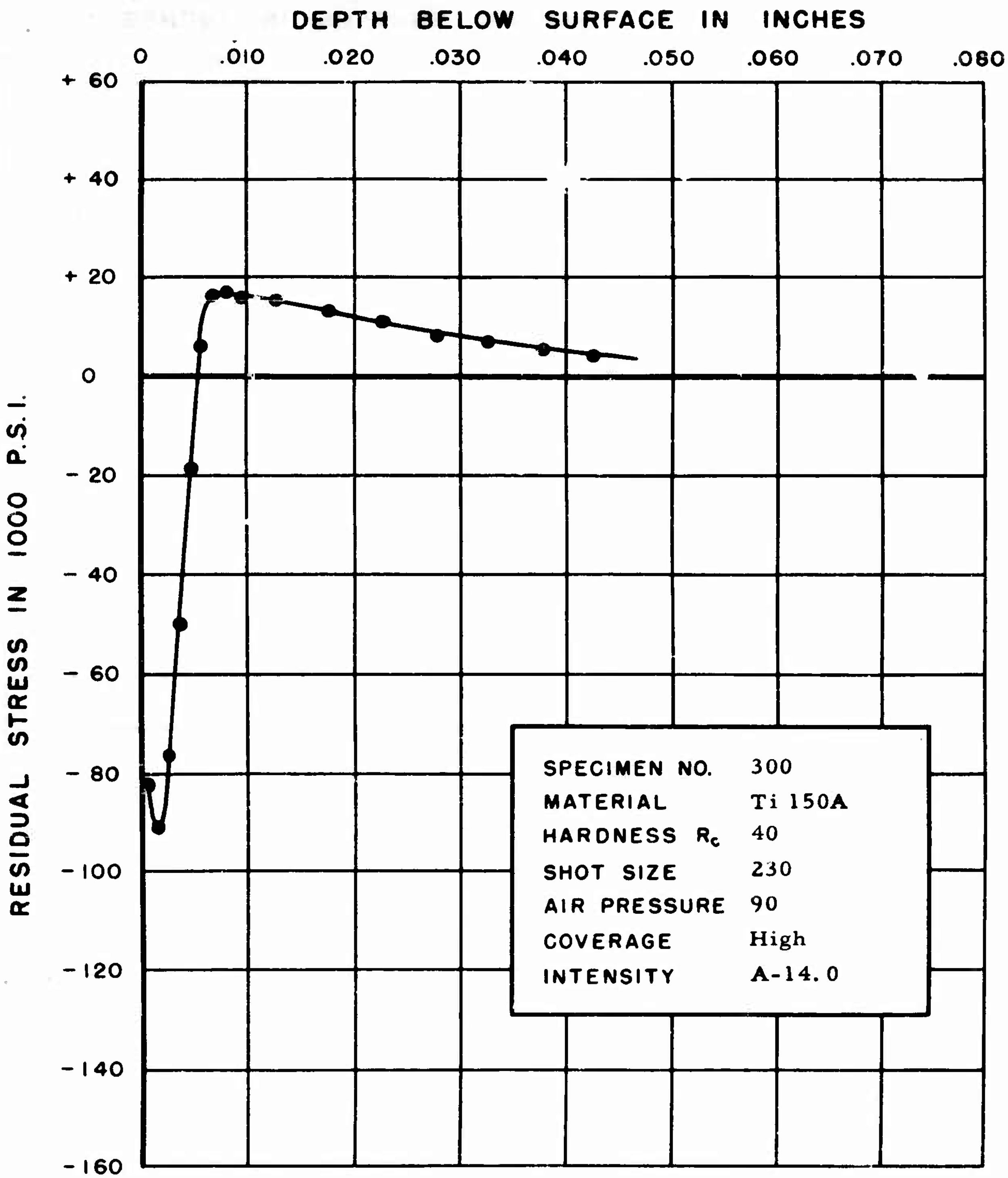

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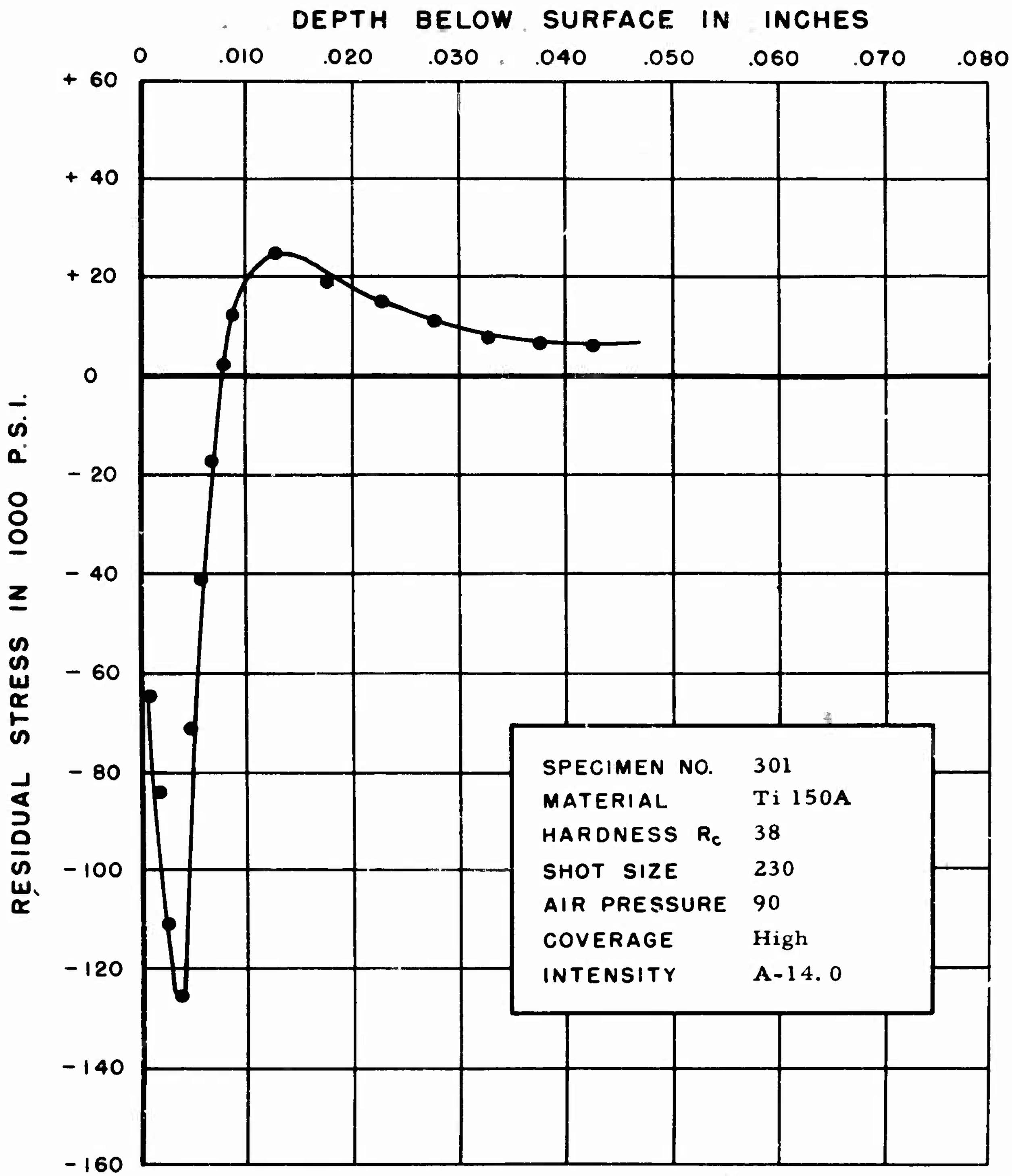

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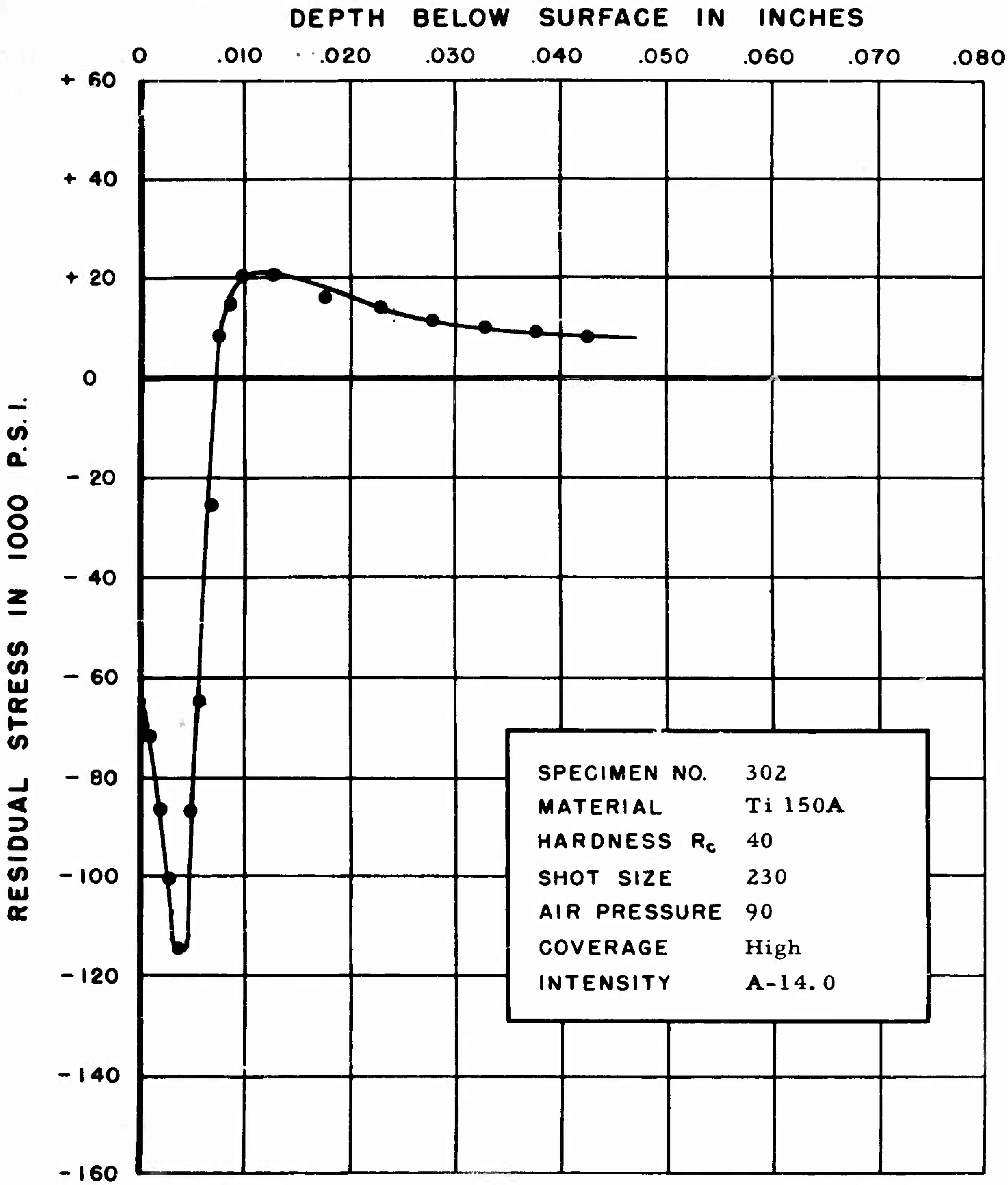

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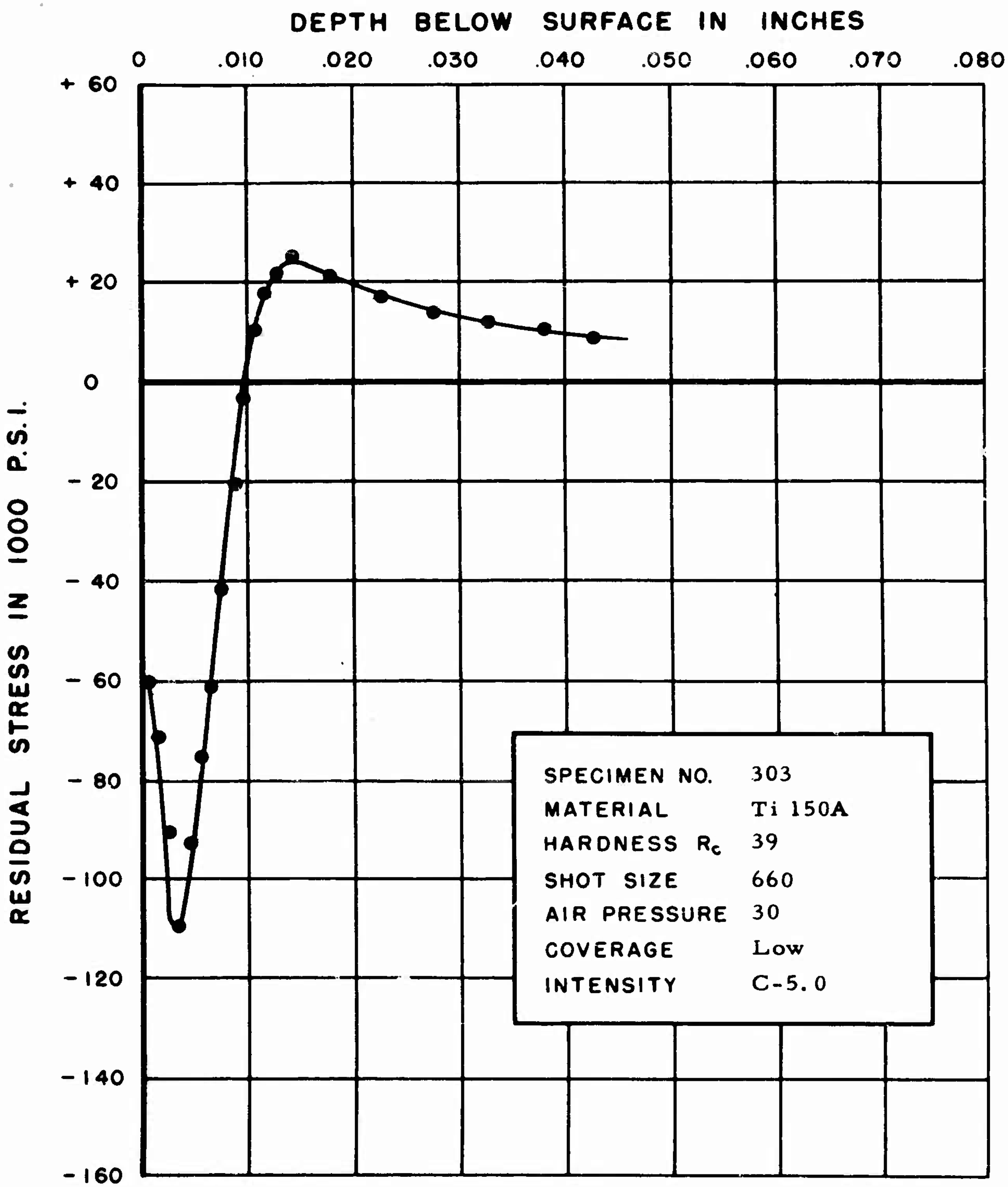
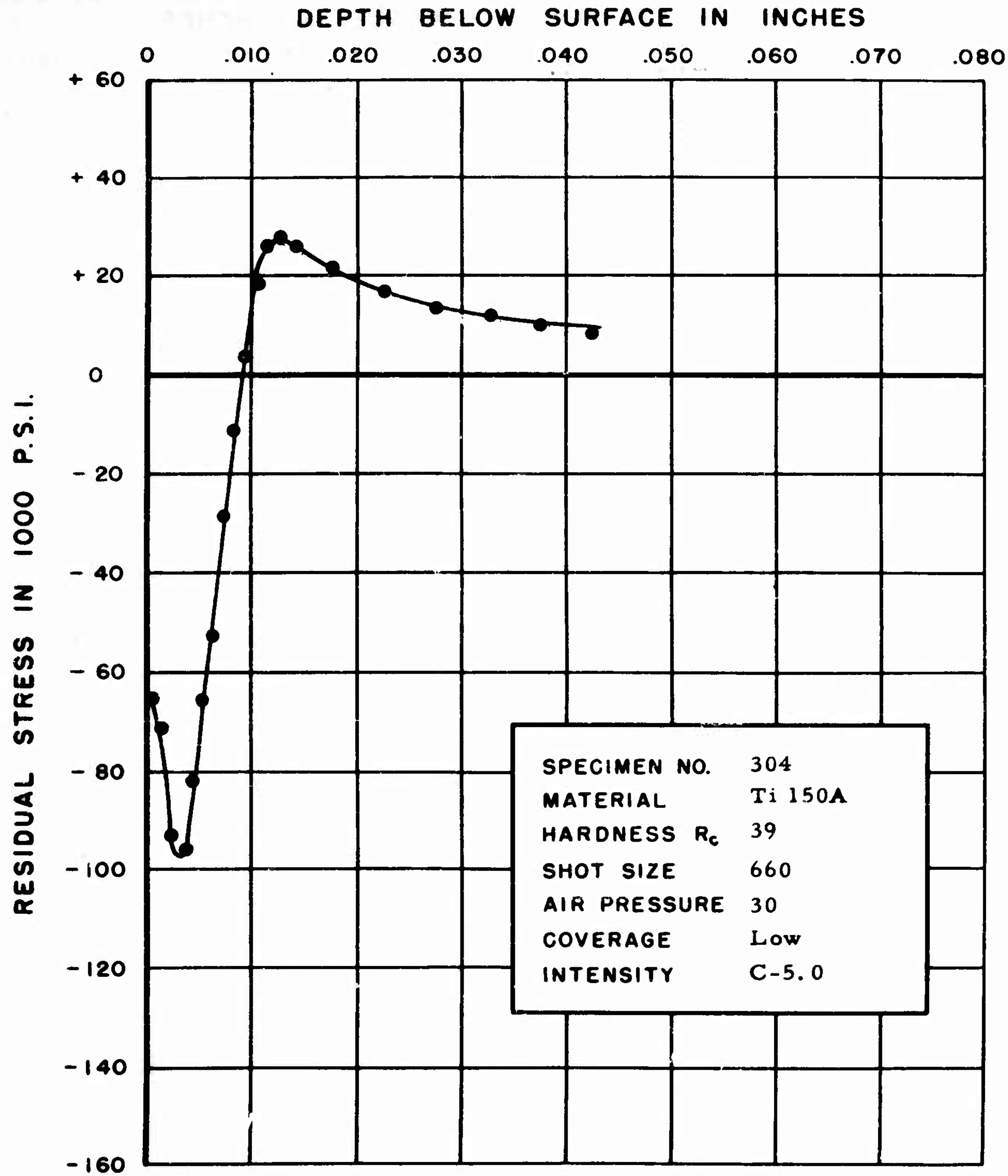


FIGURE 336. RESIDUAL STRESS DISTRIBUTION



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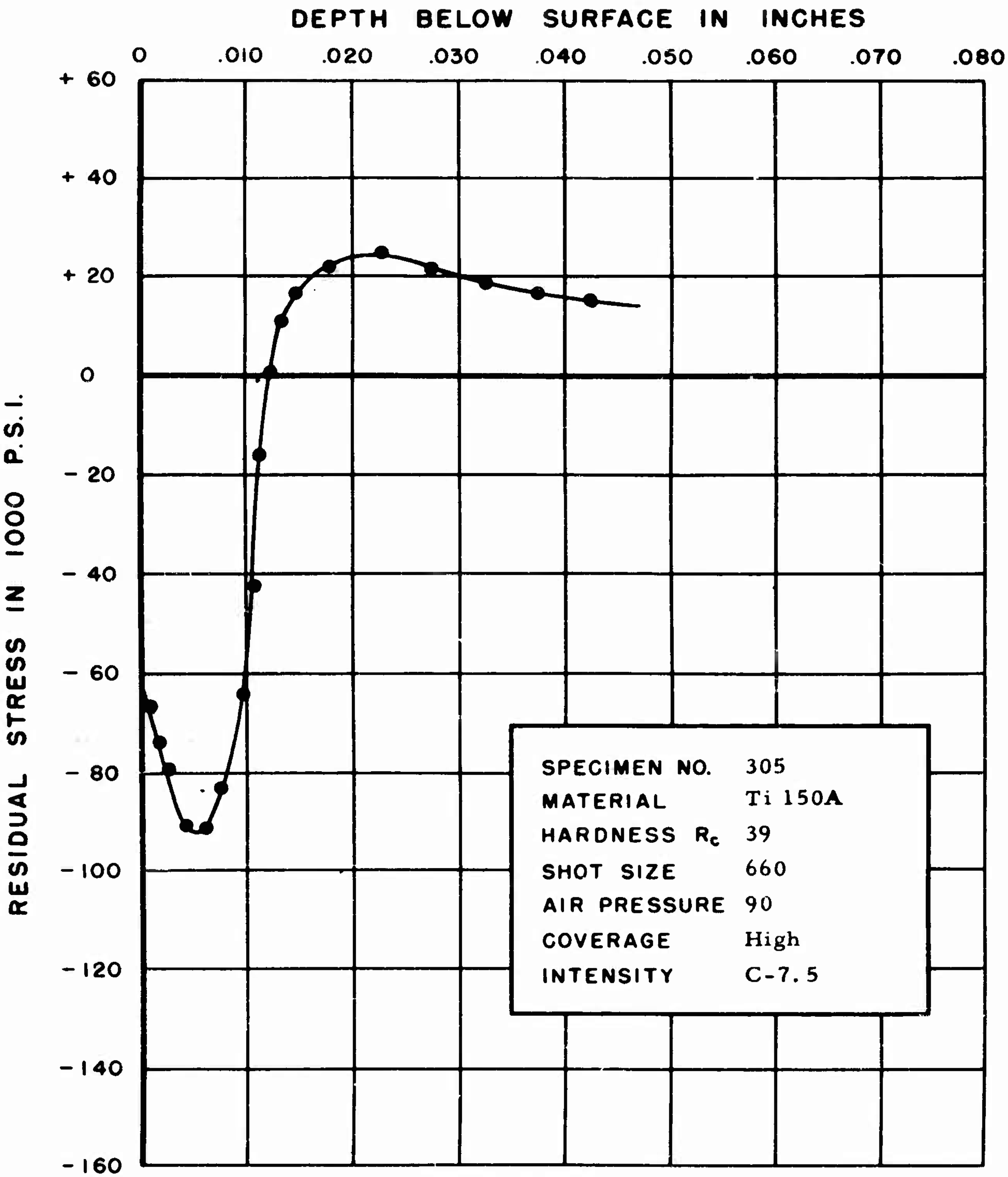

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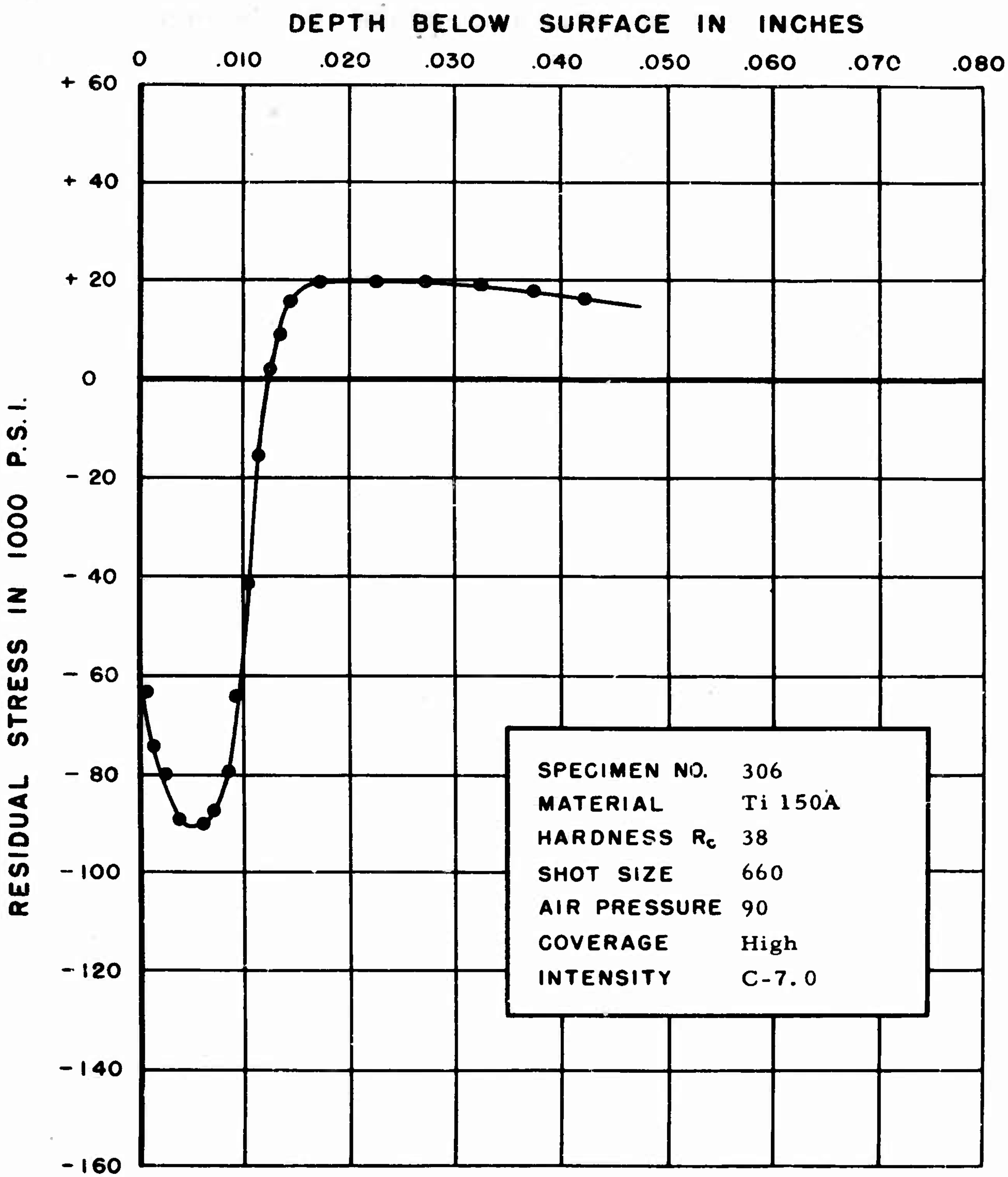

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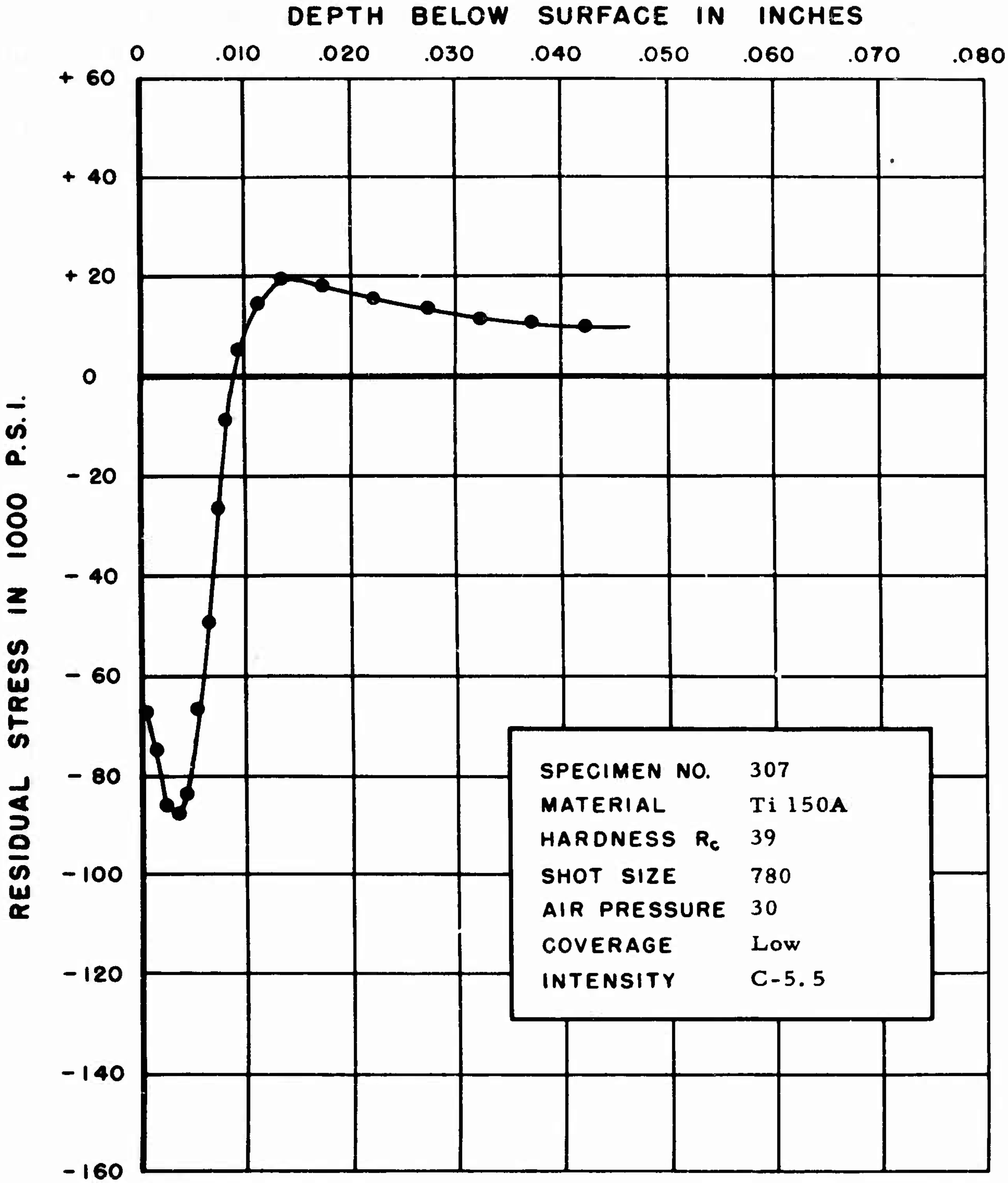

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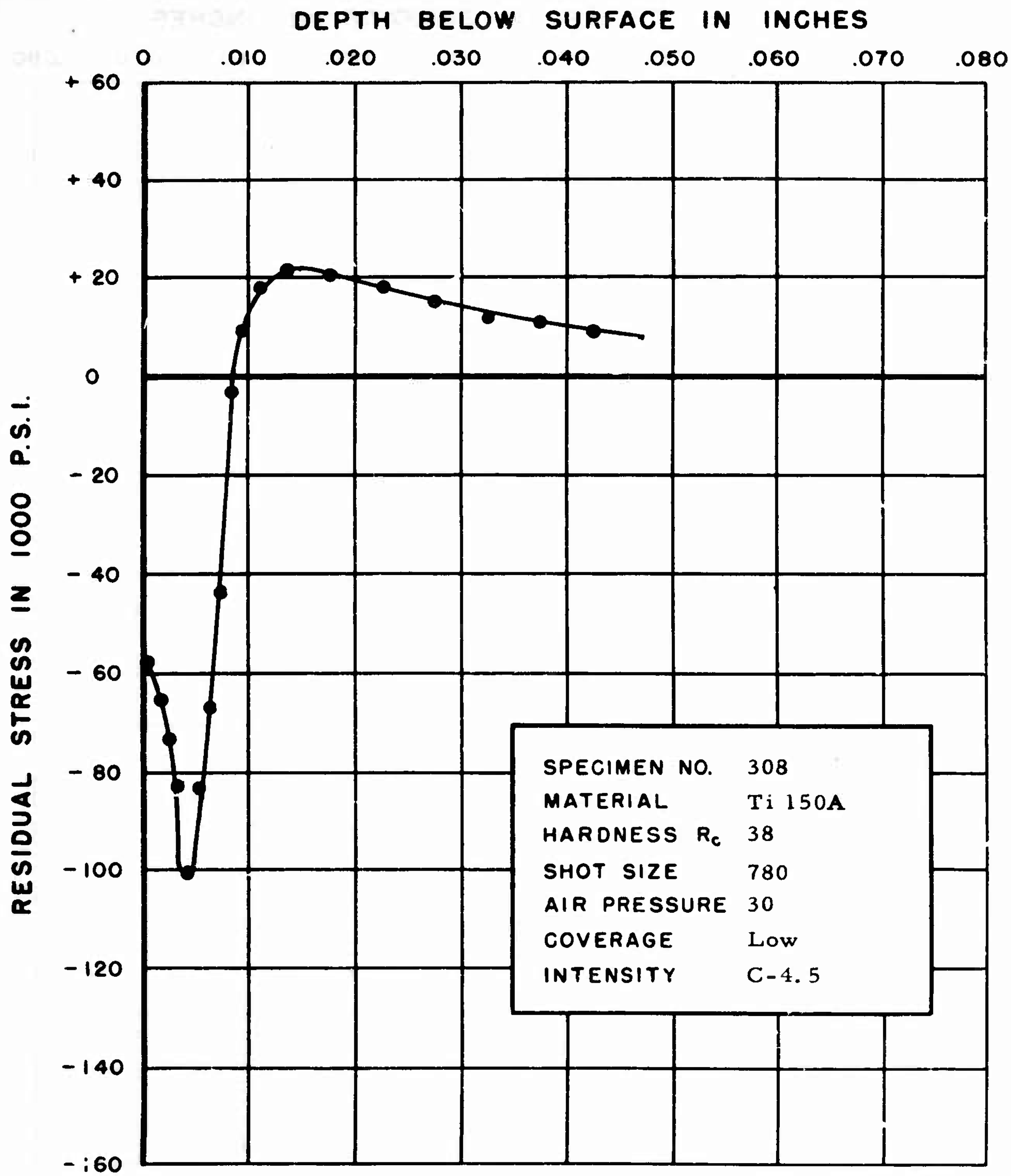

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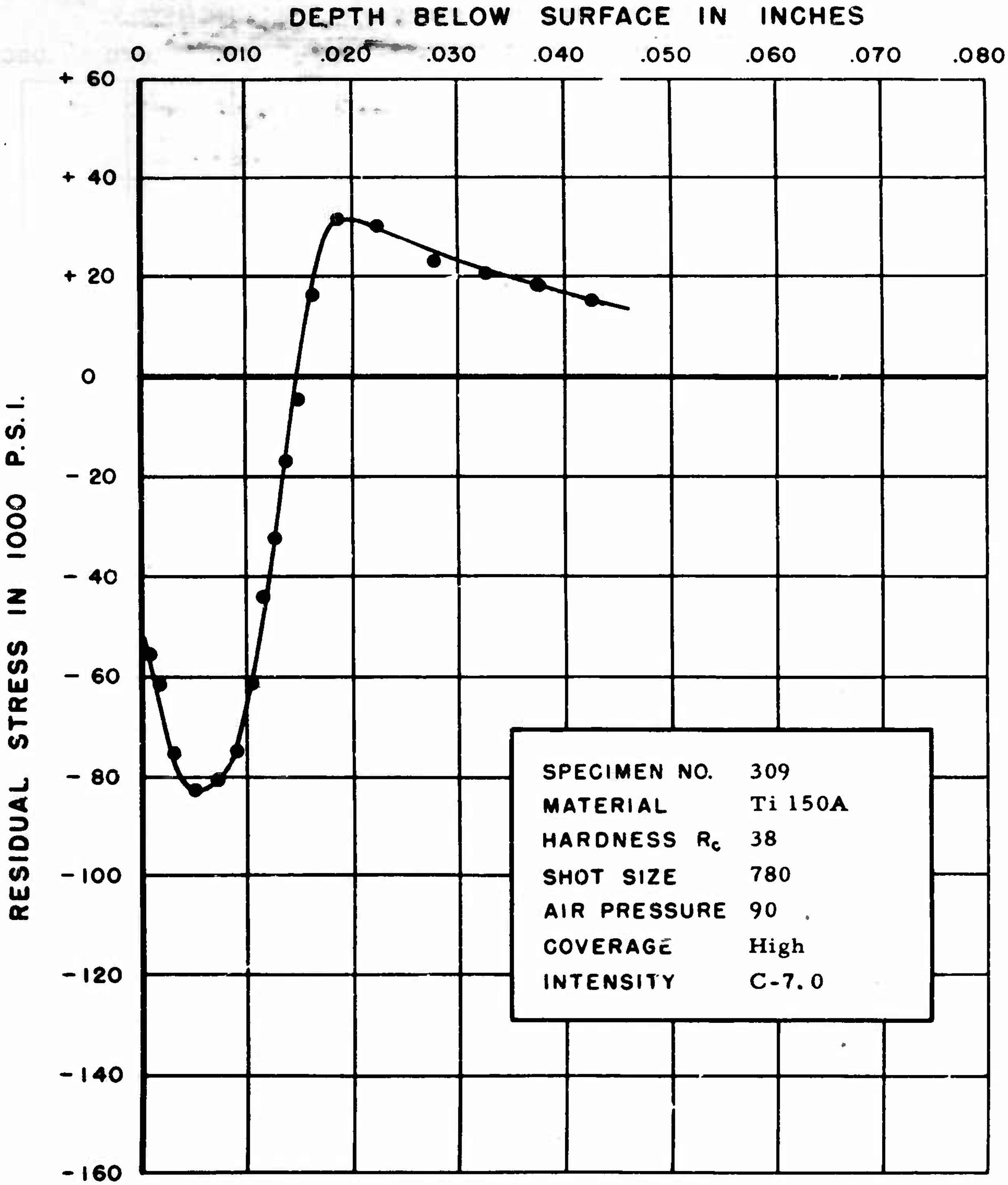

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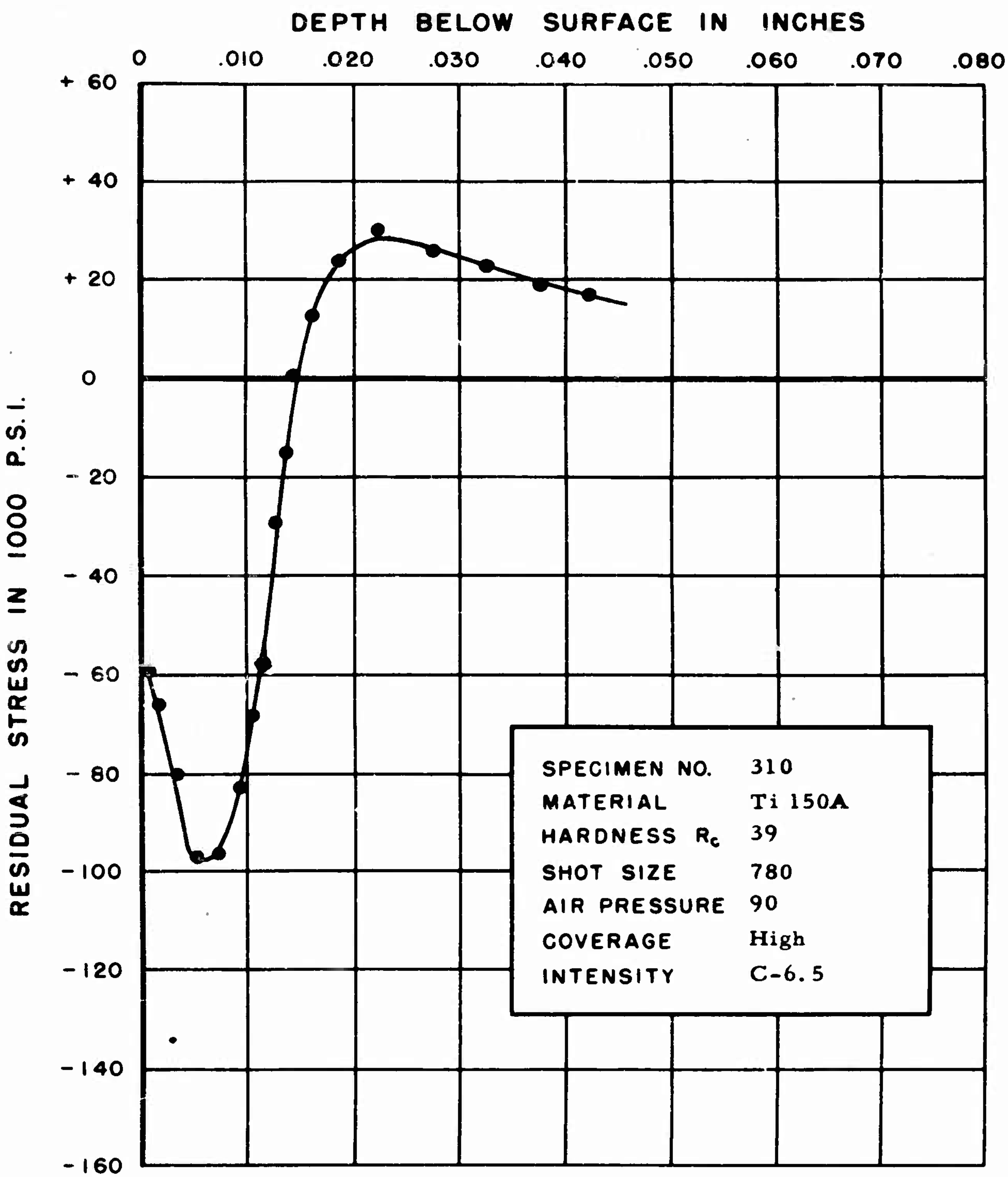

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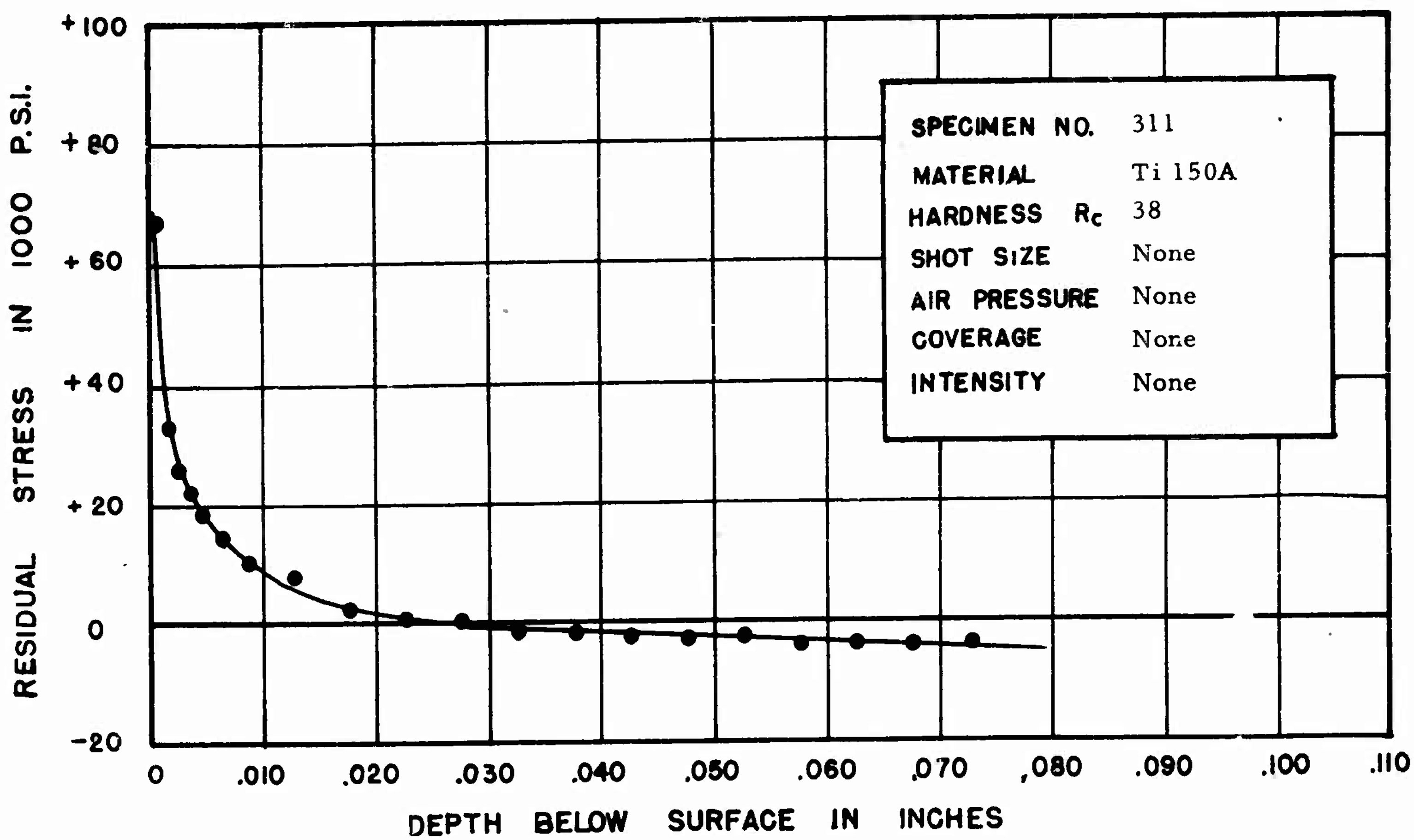

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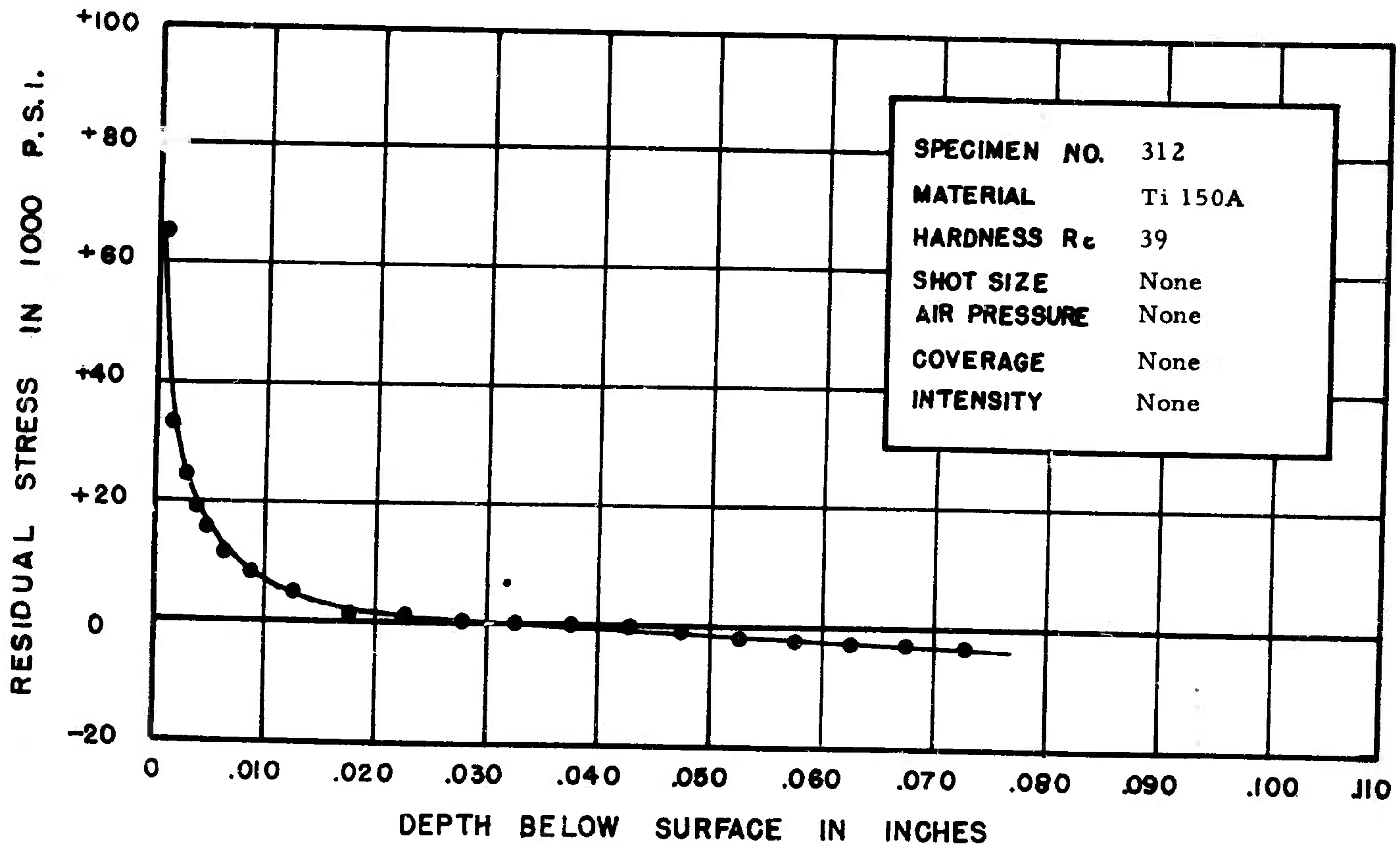

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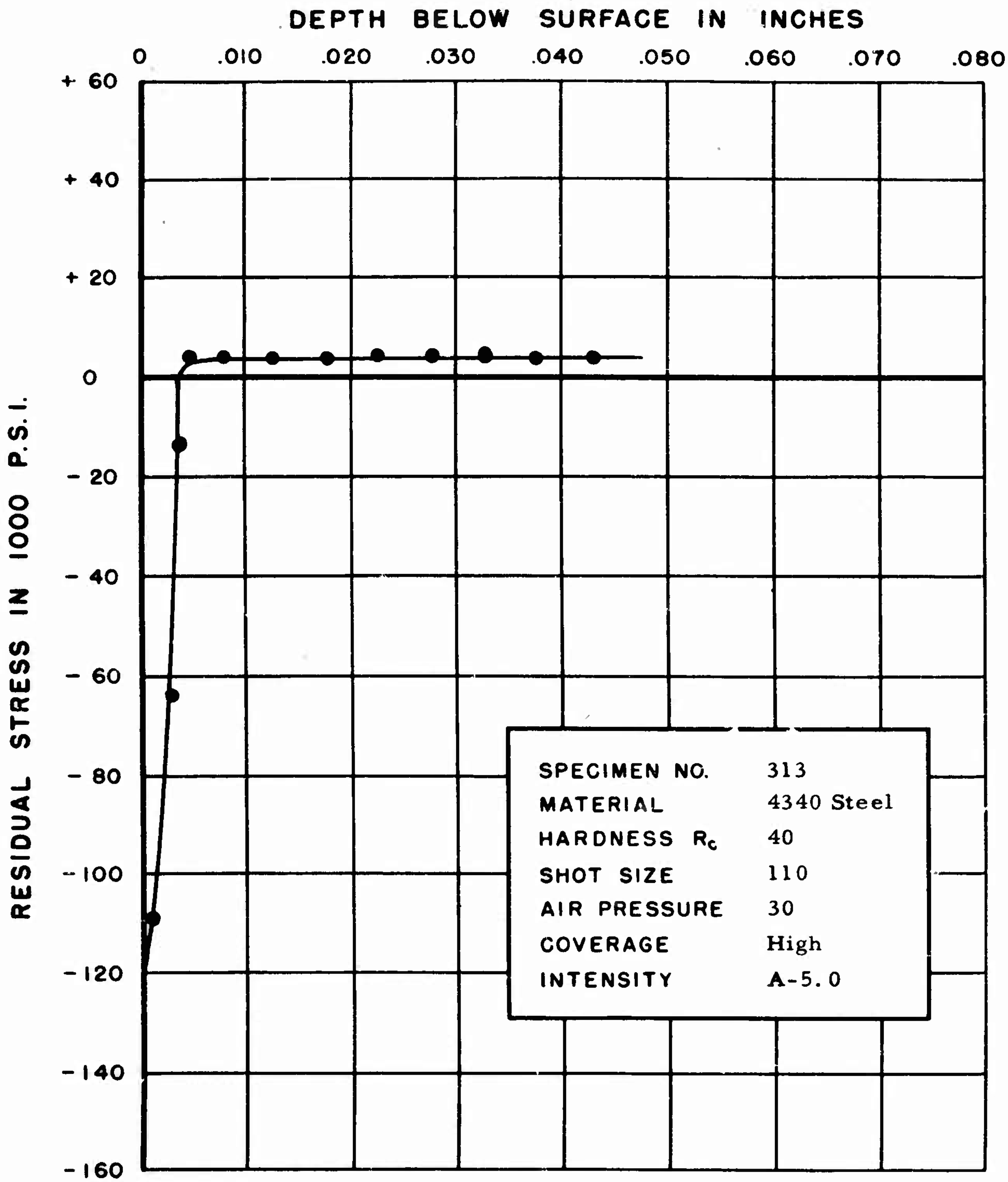

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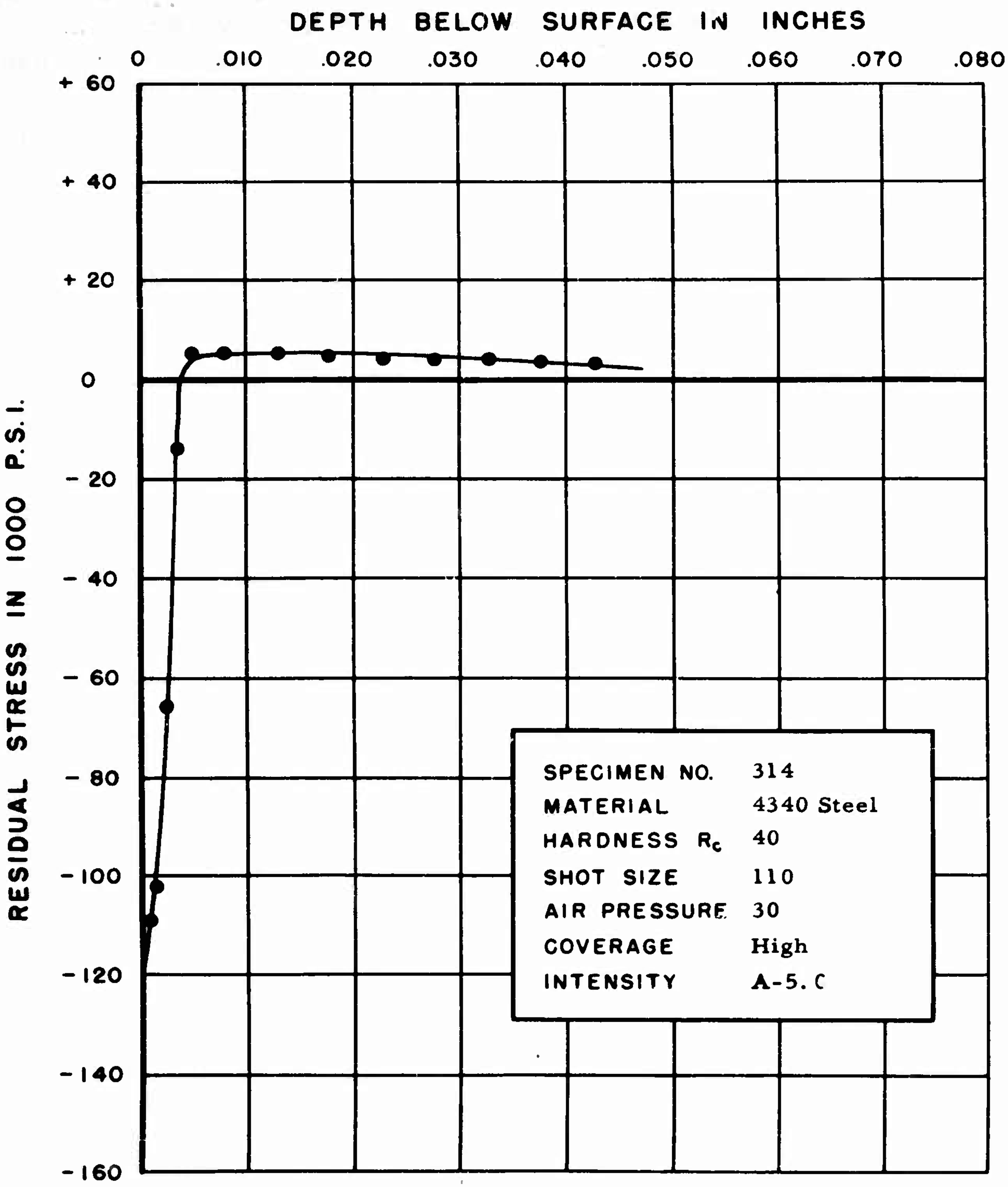

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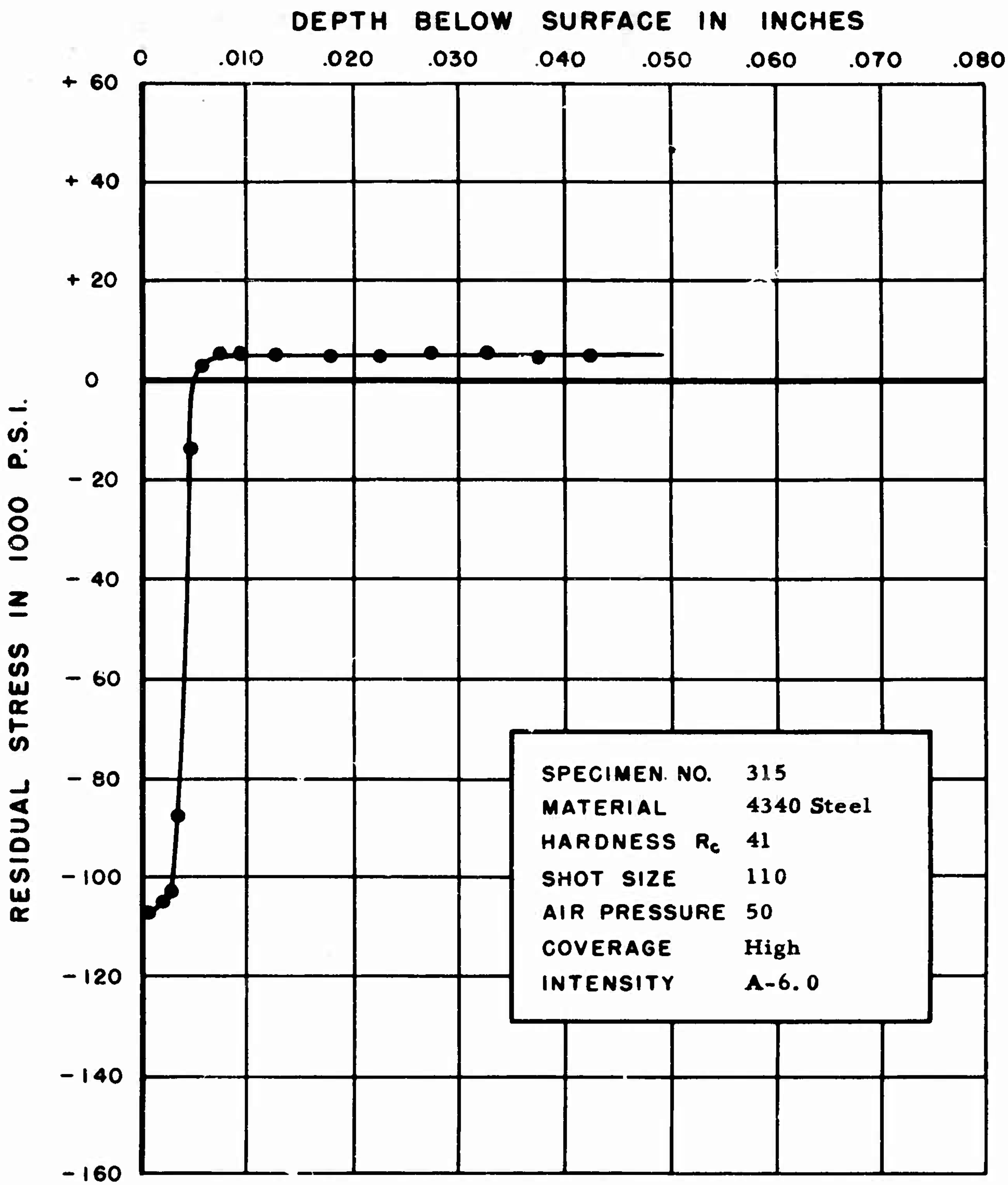

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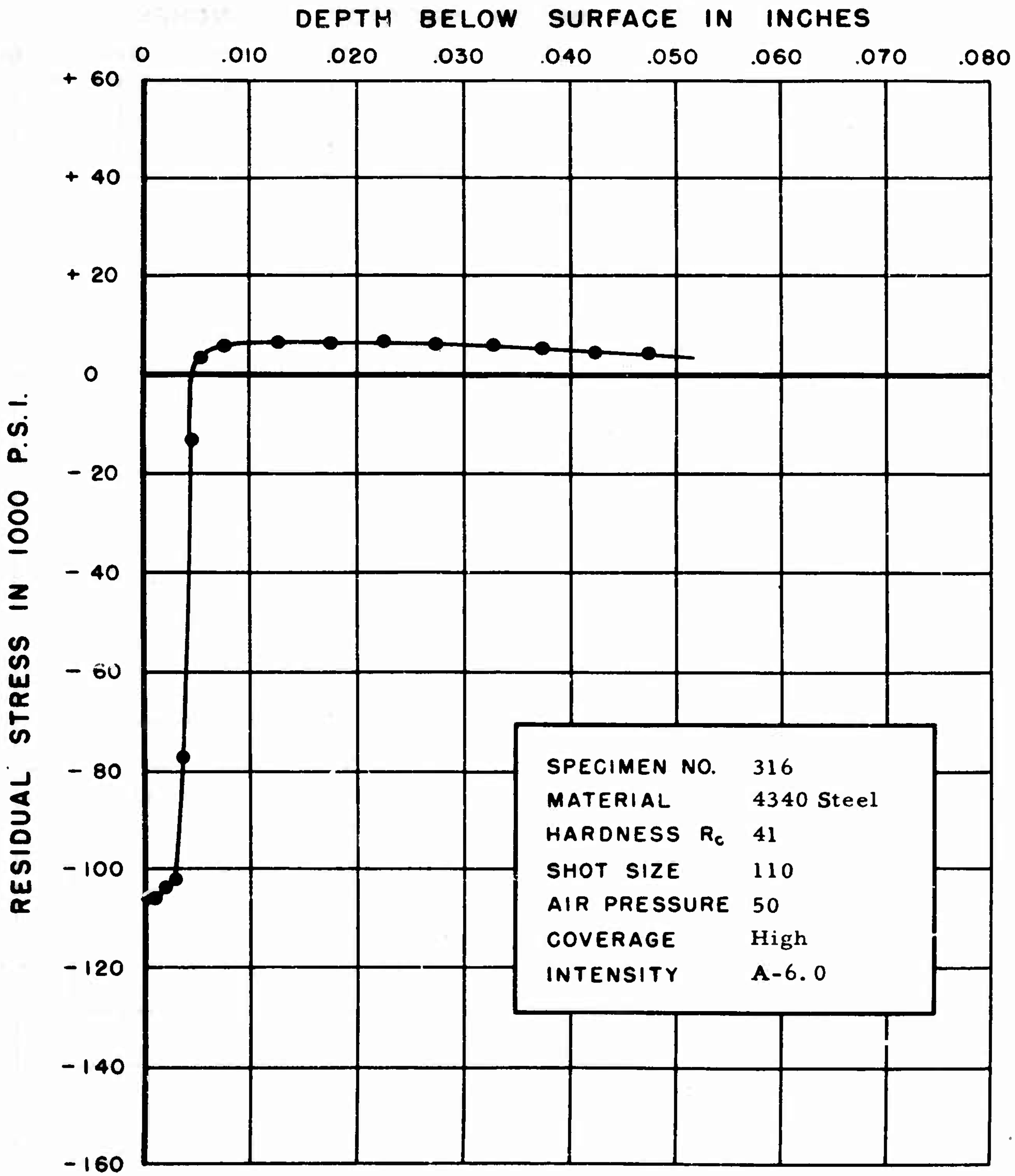
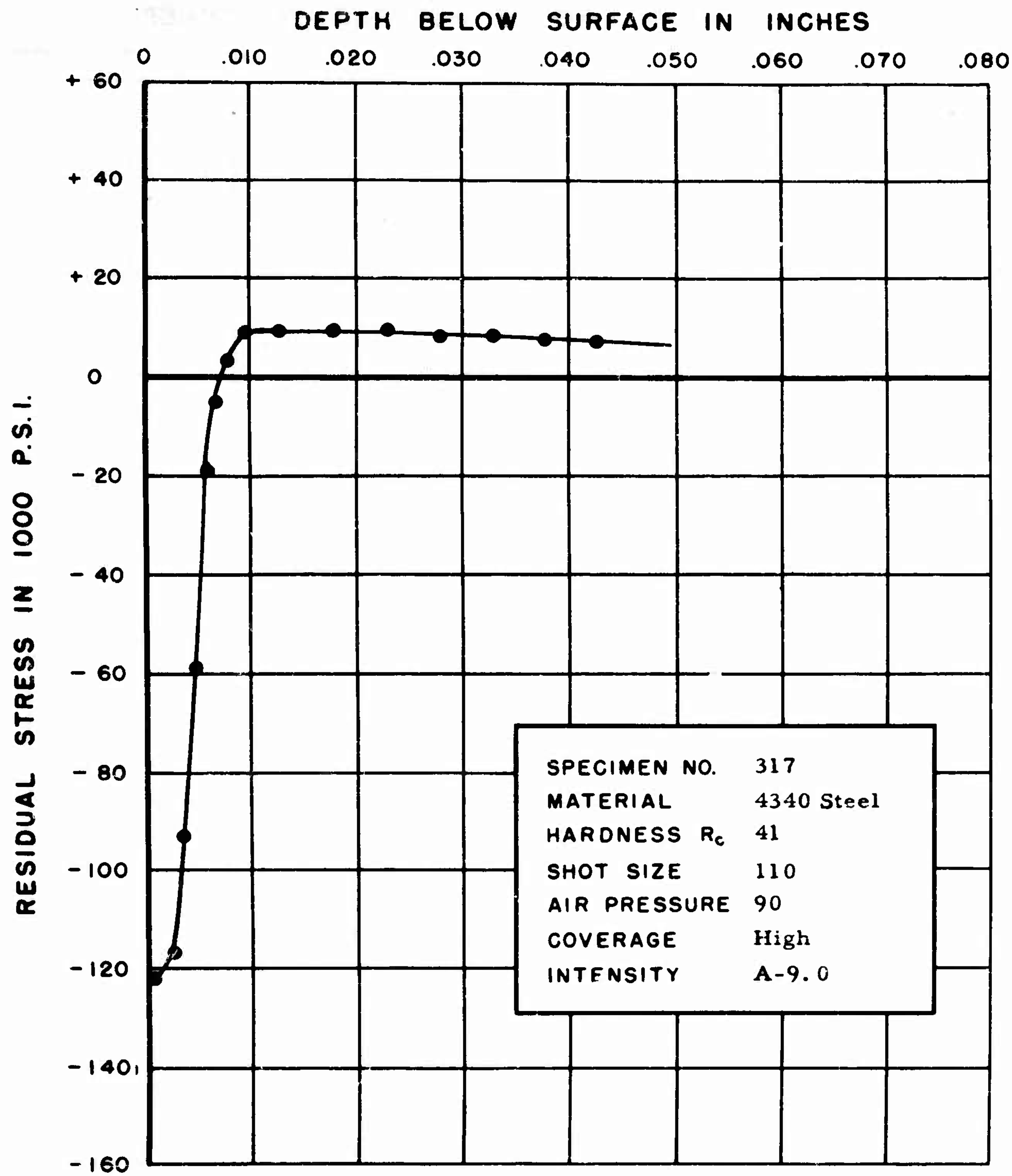


FIGURE 349. RESIDUAL STRESS DISTRIBUTION



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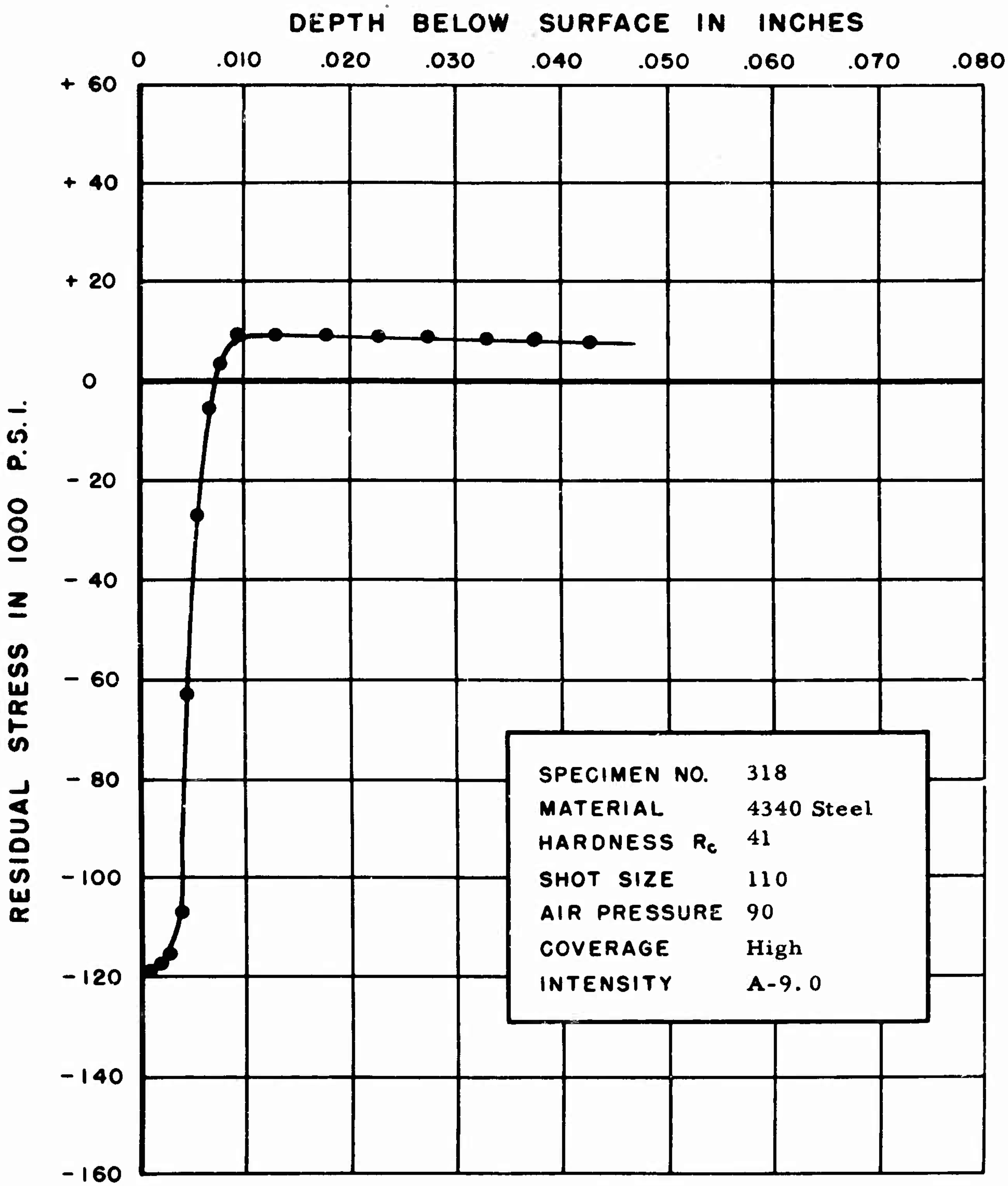

FIGURE 351. RESIDUAL STRESS DISTRIBUTION

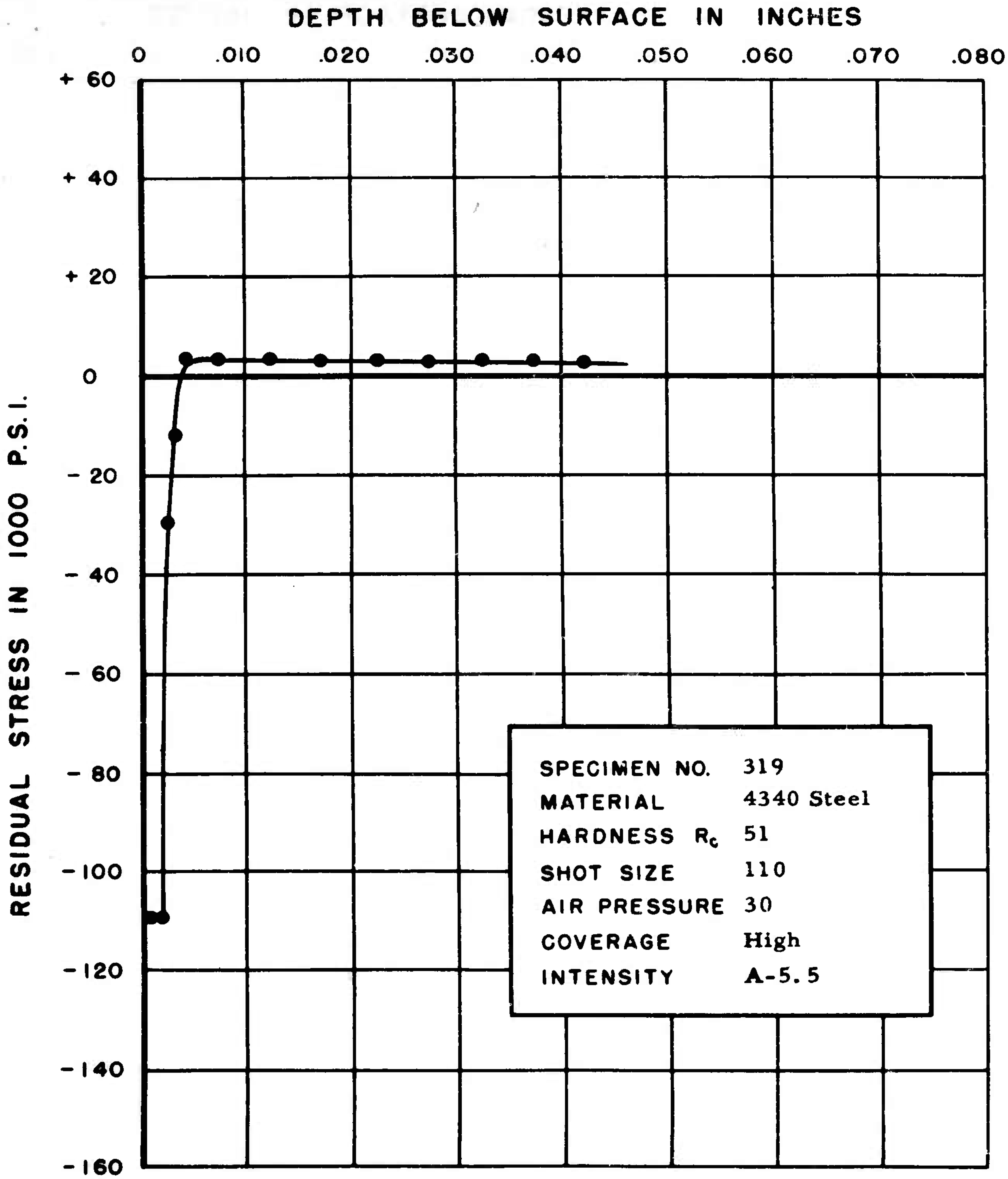

FIGURE 352. RESIDUAL STRESS DISTRIBUTION

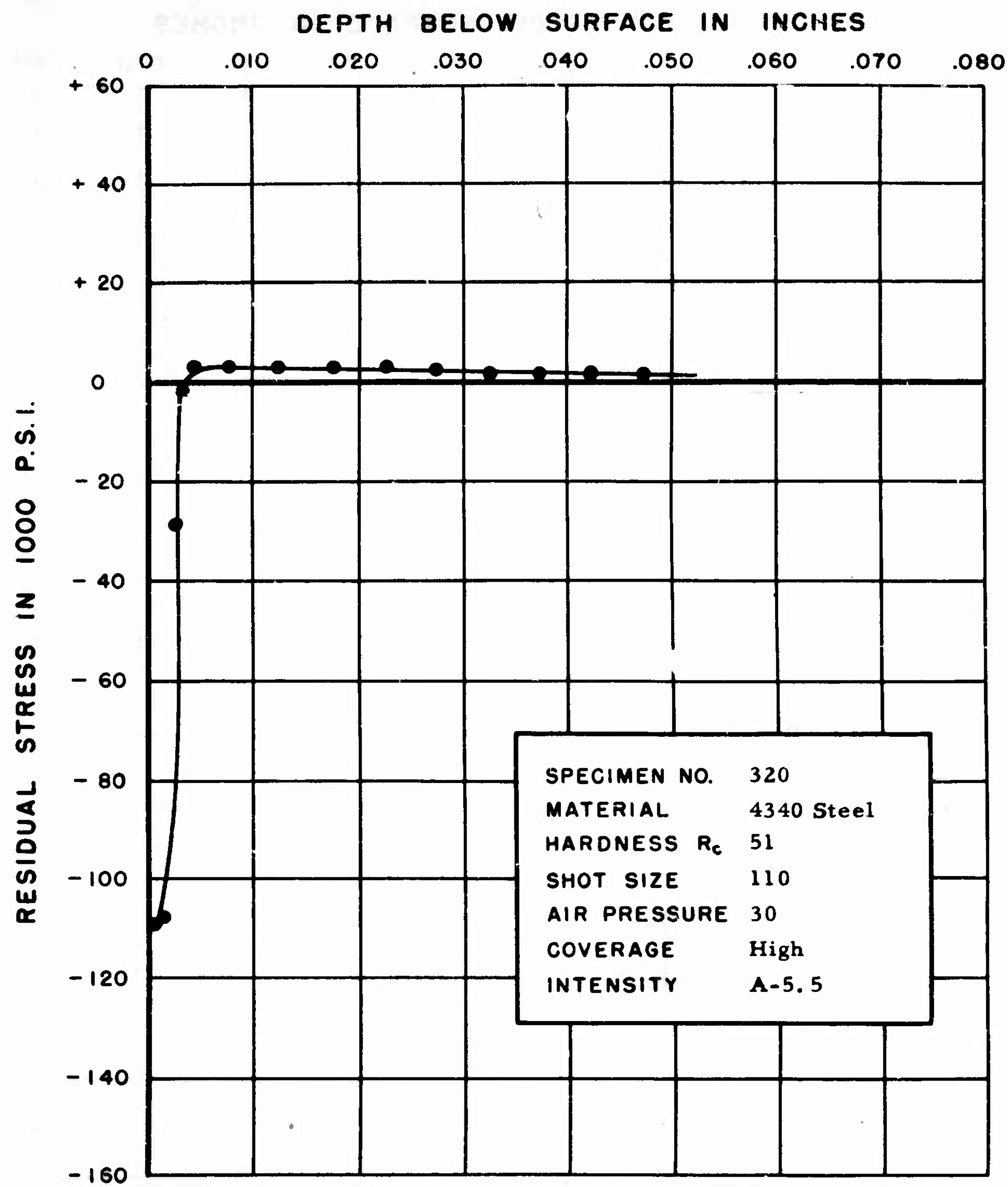

FIGURE 353. RESIDUAL STRESS DISTRIBUTION

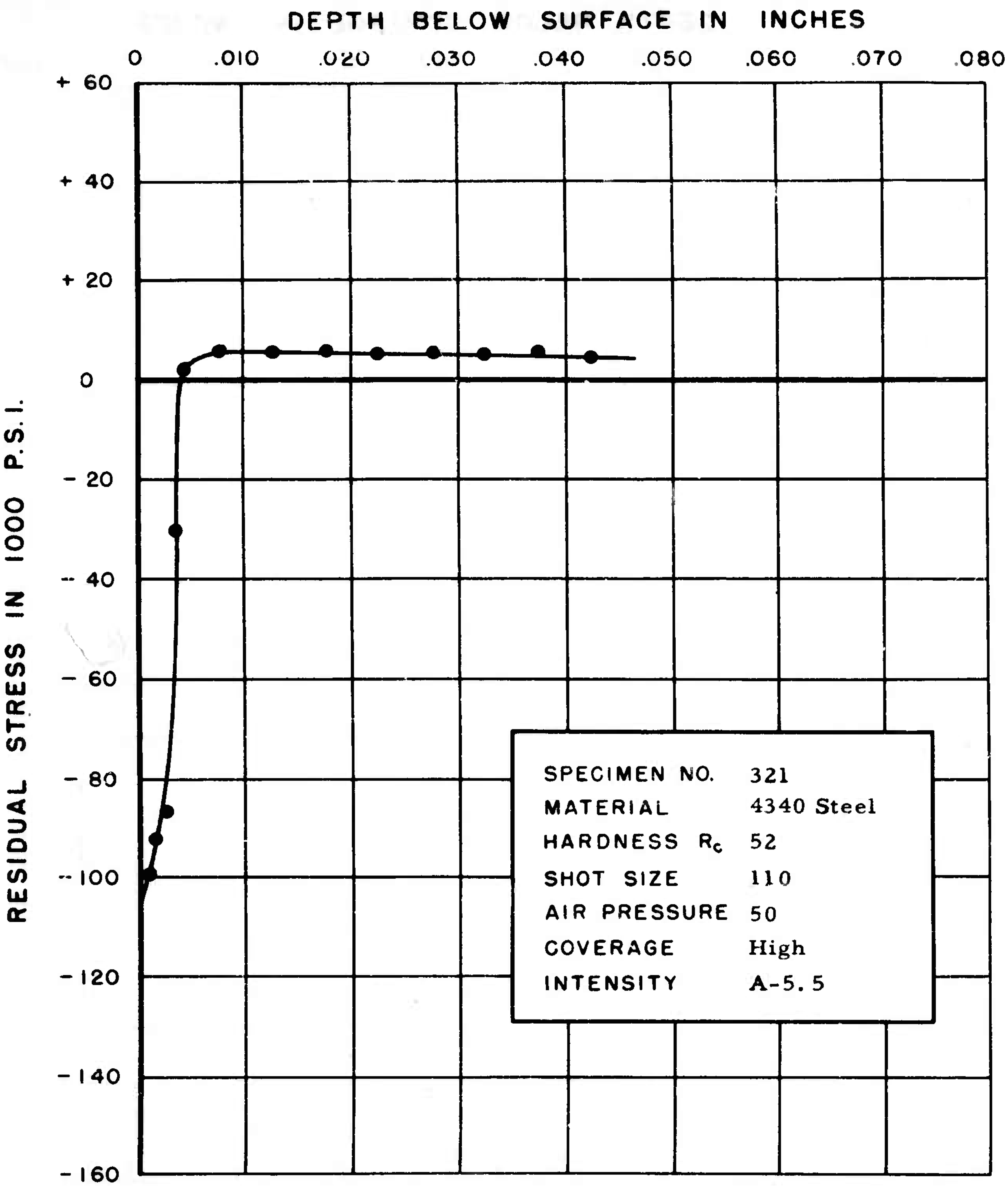

FIGURE 354. RESIDUAL STRESS DISTRIBUTION

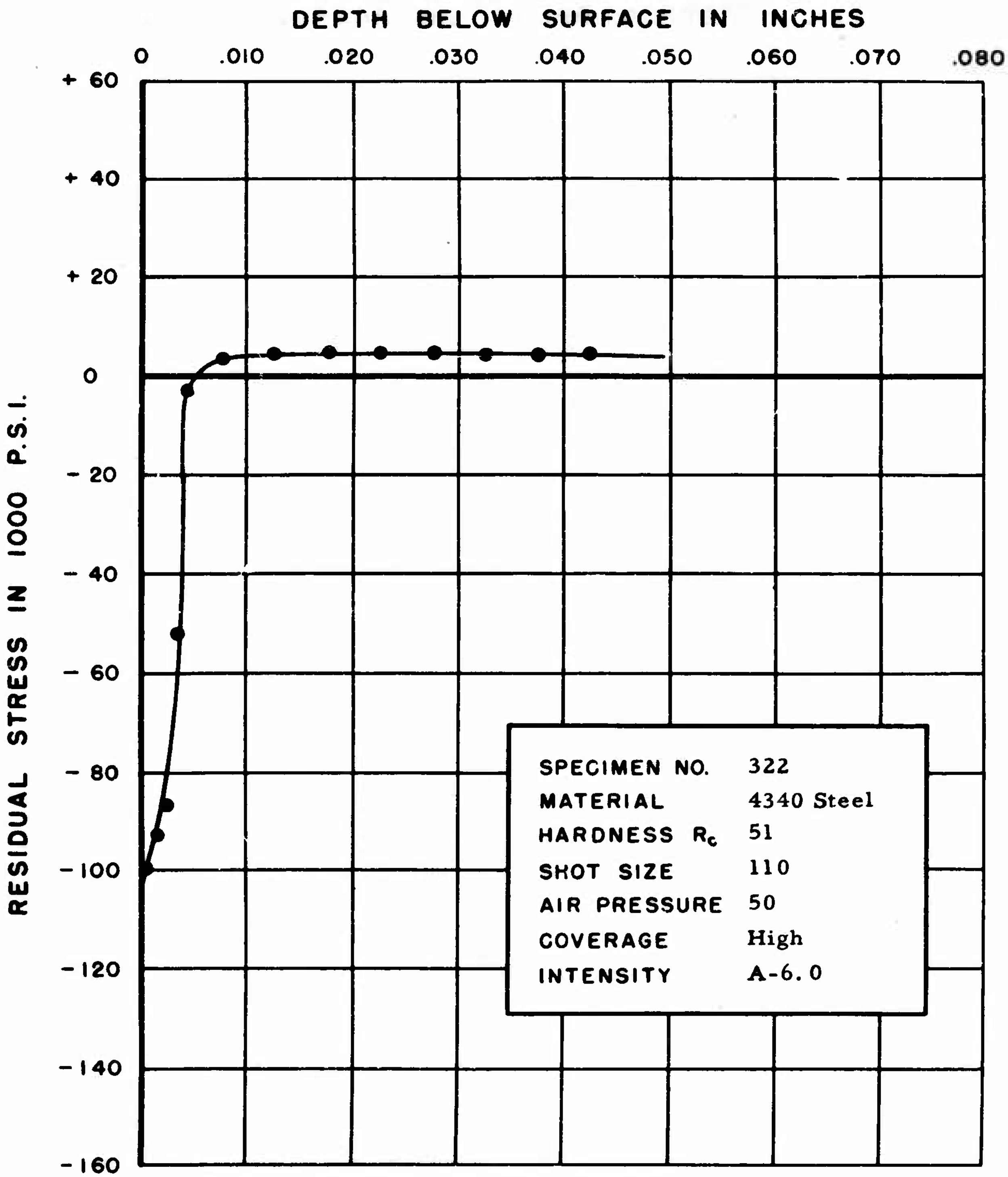

FIGURE 355. RESIDUAL STRESS DISTRIBUTION

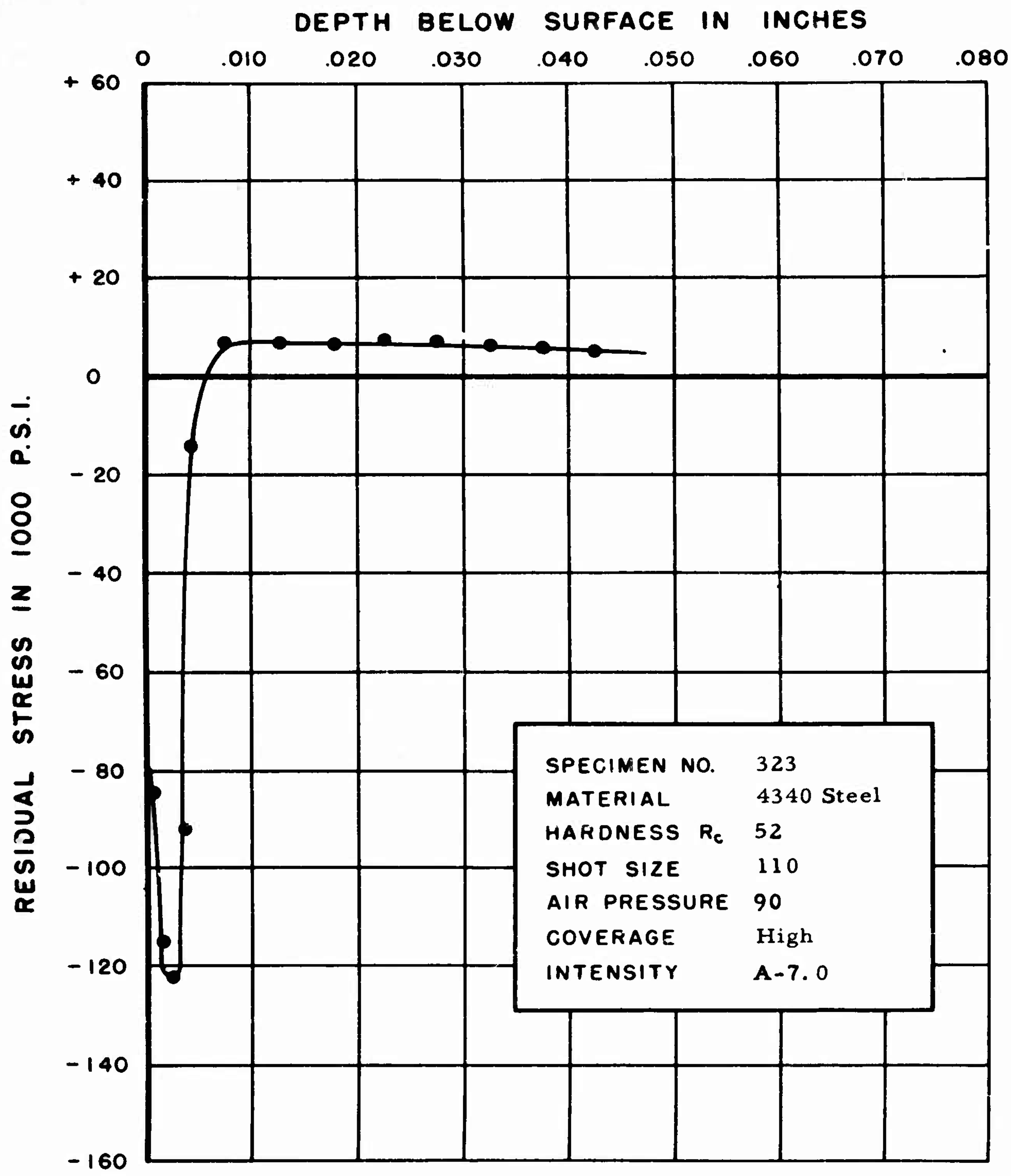

FIGURE 356. RESIDUAL STRESS DISTRIBUTION

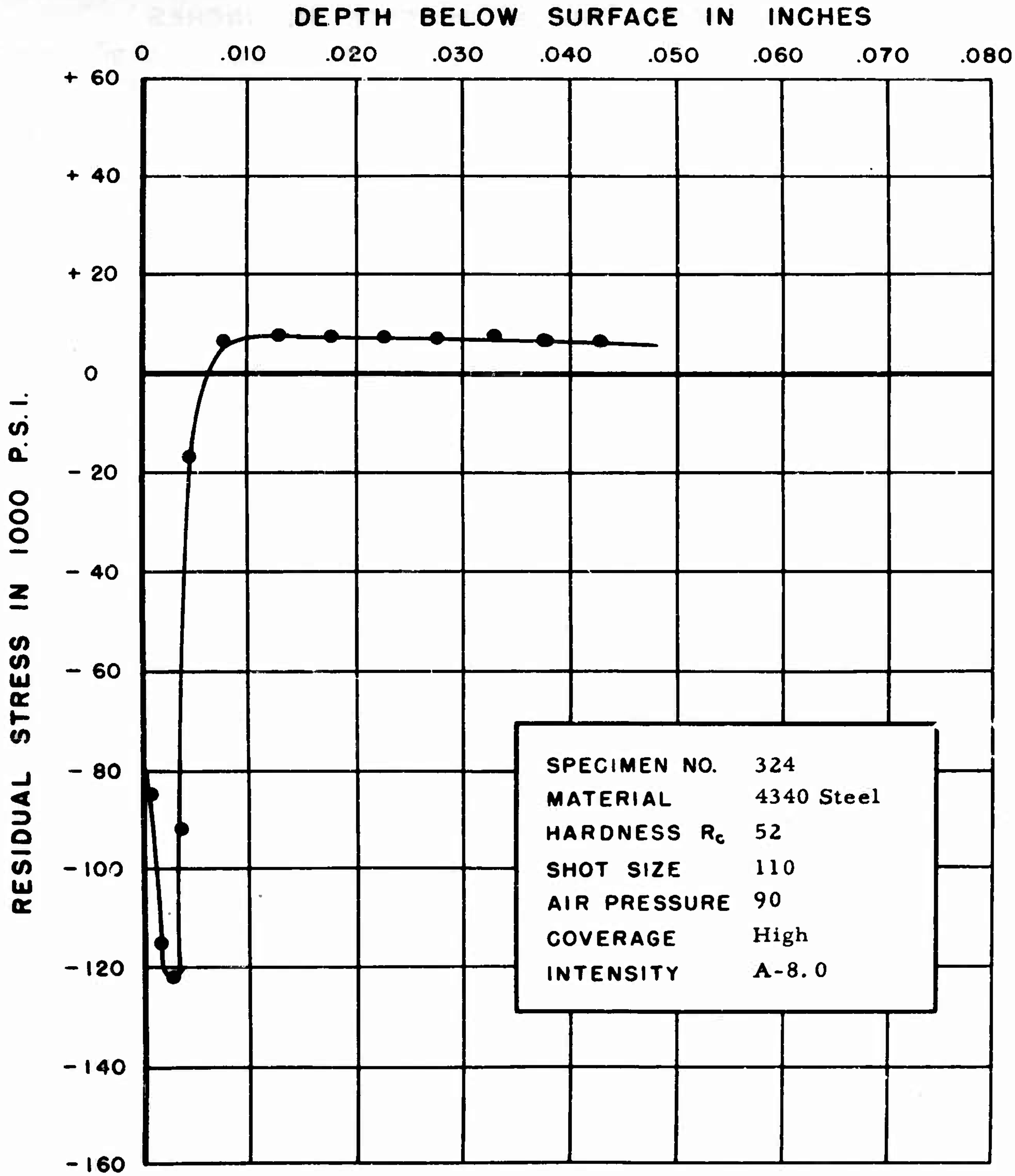

FIGURE 357. RESIDUAL STRESS DISTRIBUTION

APPENDIX III

RESIDUAL STRESS DATA

The following pages contain arc height and thickness data from which the residual stress calculations were made. The data are arranged in numerical order of specimen numbers. Tables 2 through 6, Pages 10 through 17, serve as an index relating peening treatment to specimen number.

Values of dH_A and dH_B are in units of 10^{-4} in. Values of dt are in units of inches. Use of the data and the definitions of symbols under which the data are listed are discussed in Appendix I.

<u>RESIDUAL STRESS DATA</u>

	Specimen No. 1, $t_o = .2599$			Specimen No. 2, $t_o = .2617$			Specimen No. 3, $t_o = .2607$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.17	.18	.0002	.20	.22	.0001	.17	.23	.0001
3	.29	.28	.0003	.31	.31	.0003	.16	.15	.0003
4	.29	.26	.0004	.30	.33	.0004	.29	.41	.0005
5	.42	.36	.0006	.43	.39	.0006	.38	.47	.0006
6	.46	.38	.0007	.50	.51	.0008	.46	.59	.0008
7	.54	.51	.0008	.50	.53	.0009	1.13	1.28	.0017
8	1.04	.94	.0016	.92	.98	.0016	1.53	1.71	.0029
9	1.29	1.17	.0022	1.25	1.38	.0023	1.74	2.05	.0034
10	1.69	1.41	.0029	1.55	1.73	.0032	2.03	2.25	.0055
11	2.00	1.59	.0036	1.71	1.90	.0040	1.95	2.19	.0070
12	2.16	1.64	.0054	1.70	1.97	.0058	1.55	1.85	.0135
13	1.88	.97	.0126	1.48	1.85	.0129	1.40	1.22	.0213
14	1.93	.61	.0196	1.32	1.33	.0193	1.25	1.20	.0275
15	2.04	.37	.0275	1.25	1.78	.0265	1.15	1.10	.0343
16	2.14	.18	.0352	1.12	1.68	.0339	1.05	1.00	.0410
17	2.73	-.04	.0413	.80	1.48	.0398	.93	.79	.0471
18	2.19	-.19	.0480	.91	1.57	.0463	.85	.65	.0533
19	2.19	-.43	.0556	.72	1.39	.0535			

	Specimen No. 4, $t_o = .2611$			Specimen No. 5, $t_o = .2609$			Specimen No. 6, $t_o = .2603$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.16	.16	.0001	.04	0	.0001	.04	.02	.0001
3	.16	.18	.0003	.13	.15	.0002	.08	.09	.0002
4	.33	.37	.0005	.20	.18	.0003	.21	.22	.0003
5	.51	.51	.0006	.30	.21	.0004	.26	.29	.0004
6	.56	.55	.0008	.40	.35	.0006	.38	.39	.0006
7	1.09	1.02	.0018	.47	.40	.0007	.46	.50	.0008
8	1.50	1.51	.0027	1.13	1.07	.0017	1.06	1.10	.0019
9	1.71	1.73	.0032	1.61	1.55	.0028	1.46	1.54	.0028
10	2.11	2.21	.0052	1.95	1.90	.0037	1.96	1.94	.0037
11	2.12	2.19	.0066	2.30	2.20	.0057	2.31	2.40	.0060
12	1.72	1.86	.0132	2.10	1.95	.0075	2.36	2.35	.0080
13	1.61	1.68	.0209	1.35	1.10	.0140	2.06	2.20	.0132
14	1.31	1.56	.0277	1.13	.70	.0208	2.08	2.40	.0214
15	.91	1.41	.0345	.96	.56	.0272	2.07	2.49	.0279
16	1.01	1.36	.0409	.80	.34	.0338	2.07	2.65	.0343
17	.82	1.18	.0467	.65	.20	.0400	2.08	2.77	.0406
18	.71	1.04	.0523	.44	.01	.0461	2.08	2.91	.0468
19				.15	-.20	.0512	2.14	3.10	.0527

RESIDUAL STRESS DATA

	Specimen No. 7 $t_o = .2603$			Specimen No. 8 $t_o = .2604$			Specimen No. 9 $t_o = .2608$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.08	.10	.0001	.07	.12	.0001	.18	.17	.0002
3	.15	.14	.0002	.17	.22	.0002	.46	.52	.0007
4	.20	.26	.0005	.24	.25	.0004	.67	.61	.0010
5	.40	.40	.0007	.39	.29	.0006	1.30	1.20	.0019
6	.51	.50	.0008	.59	.52	.0008	1.72	1.67	.0029
7	.59	.57	.0010	.54	.56	.0010	2.11	2.06	.0036
8	1.36	1.41	.0025	1.51	1.49	.0025	2.44	2.39	.0043
9	2.06	2.28	.0045	2.37	1.96	.0049	3.10	3.09	.0060
10	2.13	2.35	.0053	2.49	2.04	.0053	3.13	3.16	.0075
11	2.11	2.35	.0000	2.59	2.04	.0061	3.10	3.09	.0093
12	1.95	2.22	.0078	2.03	1.94	.0079	3.09	3.09	.0104
13	1.86	1.70	.0141	2.54	1.29	.0136	2.93	2.97	.0135
14	1.95	1.55	.0205	2.61	1.13	.0195	2.89	2.88	.0156
15	1.93	1.41	.0268	2.62	.87	.0259	2.74	2.59	.0226
16	1.95	1.41	.0326	2.61	.75	.0318	2.59	2.41	.0287
17	1.91	1.40	.0399	2.59	.64	.0399	2.40	2.17	.0349
18	1.97	1.41	.0451	2.54	.45	.0456	2.22	1.95	.0402
19	1.71	1.60	.0514	2.45	.27	.0516	1.99	1.63	.0458
20							1.73	1.36	.0508

	Specimen No. 10 $t_o = .2617$			Specimen No. 11 $t_o = .2615$			Specimen No. 12 $t_o = .2594$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.09	.09	.0001	.05	.09	.0001	.13	.15	.0002
3	.16	.16	.0002	.09	.11	.0002	.44	.42	.0007
4	.27	.25	.0004	.24	.21	.0004	.73	.70	.0012
5	.39	.36	.0006	.37	.35	.0006	1.40	1.41	.0022
6	.47	.45	.0007	.42	.33	.0007	2.05	2.12	.0034
7	.54	.50	.0009	.51	.49	.0009	2.51	2.58	.0043
8	1.13	1.07	.0018	1.13	1.19	.0020	2.90	2.94	.0053
9	1.46	1.42	.0026	1.60	1.62	.0029	3.61	3.59	.0060
10	1.93	1.83	.0034	2.02	2.03	.0036	3.66	3.65	.0084
11	2.59	2.55	.0054	2.74	2.72	.0058	3.67	3.60	.0099
12	2.69	2.72	.0077	2.98	2.92	.0076	3.48	3.59	.0111
13	2.61	2.57	.0141	2.80	2.92	.0137	3.43	3.40	.0144
14	2.54	2.49	.0203	2.70	2.92	.0199	3.42	3.39	.0144
15	2.44	2.37	.0273	2.72	2.93	.0263	3.17	3.12	.0214
16	2.35	2.28	.0337	2.80	2.97	.0325	2.98	2.99	.0263
17	2.14	2.15	.0388	2.77	2.95	.0389	2.75	2.81	.0354
18				2.92	2.96	.0451	2.48	2.61	.0402
19				3.00	2.85	.0517	2.18	2.31	.0465
20							1.96	2.16	.0518

RESIDUAL STRESS DATA

	Specimen No. 13 t_o = .2618			Specimen No. 14 t_o = .2613			Specimen No. 15 t_o = .2599		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.97	.98	.0016	.91	.86	.0015	1.21	1.17	.0020
3	1.72	1.80	.0032	1.63	1.87	.0033	2.12	2.06	.0036
4	2.44	2.62	.0047	2.29	2.64	.0048	2.43	2.47	.0043
5	3.05	3.20	.0069	2.99	3.38	.0074	3.22	3.30	.0064
6	3.00	3.21	.0086	2.95	3.30	.0093	3.50	3.66	.0081
7	2.94	3.21	.0098	2.91	3.32	.0105	3.56	3.75	.0092
8	2.63	3.03	.0170	2.71	3.24	.0176	3.54	3.67	.0168
9	2.49	3.01	.0236	2.63	3.20	.0248	3.45	3.62	.0240
10	2.35	2.94	.0304	2.68	3.31	.0310	3.38	3.50	.0316
11	2.29	3.00	.0372	2.71	3.32	.0379	3.30	3.45	.0388
12	2.18	3.00	.0437	2.72	3.30	.0452	3.22	3.28	.0463
13	2.04	2.98	.0524	2.64	3.29	.0526	3.12	3.13	.0536
14				2.48	3.22	.0608			

	Specimen No. 16 t_o = .2608			Specimen No. 17 t_o = .2604			Specimen No. 18 $_o$ = .2601		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.81	.92	.0015	1.10	1.14	.0018	1.37	1.39	.0021
3	1.63	1.80	.0031	1.95	1.96	.0034	2.20	2.16	.0035
4	2.07	2.24	.0039	2.59	2.66	.0048	2.88	2.75	.0048
5	2.91	3.18	.0061	3.35	3.45	.0069	3.82	3.62	.0071
6	3.15	3.48	.0074	3.53	3.72	.0086	4.05	3.79	.0086
7	3.12	3.56	.0084	3.60	3.76	.0097	4.16	3.81	.0094
8	2.18	3.12	.0165	3.11	3.67	.0176	4.41	3.63	.0171
9	1.85	2.90	.0230	2.60	3.55	.0241	4.45	3.49	.0240
10	1.55	2.74	.0302	2.27	3.66	.0319	4.60	3.41	.0315
11	1.28	2.60	.0373	2.02	3.79	.0391	4.62	3.41	.0382
12	1.09	2.43	.0441	1.84	3.98	.0470	4.69	3.43	.0451
13	.85	2.23	.0513	1.73	4.25	.0539	4.72	3.41	.0518

RESIDUAL STRESS DATA

Step	Specimen No. 19 $t_o = .2619$			Specimen No. 20 $t_o = .2612$			Specimen No. 21 $t_o = .2594$		
	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.10	.10	.0001	.07	.10	.0001	.06	.06	.0001
3	.17	.17	.0001	.12	.12	.0001	.13	.13	.0002
4	.20	.19	.0003	.17	.16	.0002	.26	.26	.0003
5	.32	.30	.0004	.22	.24	.0004	.38	.38	.0005
6	.32	.34	.0006	.32	.22	.0006	.65	.65	.0006
7	.48	.49	.0008	.52	.43	.0008	1.29	1.29	.0008
8	.98	1.09	.0017	.92	1.43	.0018	1.93	1.93	.0019
9	1.47	1.39	.0027	1.44	1.43	.0028	2.53	2.53	.0030
10	2.29	2.22	.0039	2.14	2.22	.0038	3.10	3.10	.0043
11	3.42	3.54	.0063	3.40	3.50	.0063	4.35	4.20	.0070
12	3.89	4.09	.0083	3.99	4.05	.0084	4.87	4.62	.0100
13	3.85	4.19	.0151	4.31	4.14	.0148	5.13	4.72	.0170
14	3.74	4.16	.0226	4.42	4.11	.0218	5.15	4.65	.0237
15	3.57	4.01	.0292	4.47	4.02	.0281	5.10	4.50	.0321
16	3.67	4.00	.0354	4.53	3.97	.0344	5.00	4.34	.0389
17	3.84	4.04	.0422	4.62	4.02	.0411	4.88	4.17	.0463
18	3.84	3.98	.0464	4.62	3.97	.0453	4.72	4.00	.0537
19	3.97	3.89	.0560	4.67	4.02	.0539			

Step	Specimen No. 22 $t_o = .2618$			Specimen No. 23 $t_o = .2608$			Specimen No. 24 $t_o = .2602$		
	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.13	.12	.0001	.14	.13	.0002	.08	.13	.0001
3	.13	.17	.0002	.22	.22	.0003	.21	.24	.0002
4	.28	.27	.0003	.37	.37	.0005	.34	.38	.0004
5	.47	.39	.0005	.47	.47	.0008	.46	.43	.0006
6	.57	.47	.0007	.57	.62	.0009	.52	.53	.0008
7	.79	.77	.0009	.67	.72	.0012	.66	.67	.0010
8	1.38	1.37	.0023	1.77	1.67	.0029	1.91	1.93	.0031
9	2.28	2.25	.0036	2.45	2.31	.0041	2.52	2.53	.0042
10	2.88	2.85	.0047	2.97	2.82	.0051	3.05	3.08	.0052
11	3.97	3.70	.0069	4.02	3.77	.0073	4.20	4.23	.0078
12	4.81	4.49	.0102	4.52	4.34	.0090	4.73	4.73	.0095
13	4.88	4.52	.0170	4.97	4.62	.0168	4.96	4.93	.0165
14	4.76	4.39	.0244	5.05	4.67	.0229	5.03	4.93	.0233
15	4.83	4.27	.0318	5.07	4.75	.0292	5.21	4.93	.0294
16	4.68	4.09	.0386	5.03	4.78	.0369	5.31	4.93	.0364
17	4.63	3.92	.0466	4.89	4.79	.0432	5.41	4.98	.0438
18	4.58	3.72	.0538	4.75	4.77	.0501	5.51	5.13	.0507
19				4.59	4.86	.0548			

RESIDUAL STRESS DATA

Step	Specimen No. 25 $t_o = .2617$ dH_A	dH_B	dt	Specimen No. 26 $t_o = .2605$ dH_A	dH_B	dt	Specimen No. 27 $t_o = .2623$ dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.22	.28	.0001	.20	.10	.0001	.08	.14	.0001
3	.27	.33	.0002	.23	.20	.0002	.20	.18	.0002
4	.34	.39	.0004	.31	.30	.0003	.33	.35	.0004
5	.43	.55	.0006	.40	.40	.0005	.40	.45	.0005
6	.55	.60	.0008	.50	.45	.0007	.47	.53	.0007
7	.50	.58	.0009	.47	.43	.0009	.63	.62	.0009
8	1.25	1.38	.0024	1.33	1.30	.0023	1.20	1.25	.0020
9	2.02	2.12	.0036	2.02	2.08	.0036	1.65	1.77	.0030
10	2.82	2.83	.0048	2.87	2.88	.0048	2.20	2.30	.0040
11	4.17	4.08	.0069	4.30	4.28	.0074	3.45	3.62	.0063
12	5.37	4.68	.0089	5.02	5.08	.0105	4.15	4.37	.0082
13	5.34	5.50	.0167	5.59	5.66	.0177	6.25	5.75	.0151
14	5.24	5.46	.0238	5.76	5.73	.0256	6.45	5.74	.0230
15	5.20	5.38	.0309	5.91	5.82	.0319	6.47	5.60	.0301
16	5.14	5.18	.0377	6.08	5.85	.0396	6.48	5.48	.0372
17	5.05	5.19	.0448	6.21	5.89	.0460	6.45	5.35	.0446
18	5.01	5.13	.0516				6.40	5.17	.0523

Step	Specimen No. 28 $t_o = .2608$ dH_A	dH_B	dt	Specimen No. 29 $t_o = .2567$ dH_A	dH_B	dt	Specimen No. 30 $t_o = .2600$ dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.10	0	.0001	1.47	1.41	.0024	1.60	1.60	.0023
3	.30	.10	.0002	2.57	2.41	.0041	2.51	2.57	.0039
4	.40	.10	.0004	3.09	2.91	.0050	2.95	3.01	.0048
5	.50	.10	.0005	4.06	3.93	.0069	3.87	4.04	.0067
6	.70	.20	.0007	4.84	4.72	.0085	4.49	4.69	.0082
7	.80	.40	.0009	5.23	5.18	.0096	5.03	5.17	.0095
8	1.20	1.10	.0020	6.51	6.52	.0165	6.20	6.23	.0179
9	2.00	2.00	.0029	6.66	6.61	.0238	6.05	6.24	.0249
10	3.12	2.75	.0040	6.84	6.70	.0309	6.01	6.28	.0314
11	4.30	3.97	.0063	7.06	6.87	.0378	5.88	6.39	.0388
12	5.18	4.98	.0081	7.33	7.05	.0454	5.77	6.40	.0466
13	6.31	6.35	.0149	7.57	7.29	.0520	5.64	6.42	.0538
14	5.98	6.40	.0222						
15	5.80	6.42	.0292						
16	5.88	6.61	.0370						
17	5.88	6.70	.0433						
18	5.93	6.80	.0505						
19	5.92	6.90	.0575						

RESIDUAL STRESS DATA

	Specimen No. 31 $t_o = .2601$			Specimen No. 32 $t_o = .2597$			Specimen No. 33 $t_o = .2600$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	1.39	1.36	.0025	2.05	1.75	.0025	.40	.50	.0003
3	2.35	2.25	.0041	3.07	2.77	.0042	.90	.90	.0008
4	2.88	2.82	.0049	3.57	3.21	.0050	1.00	1.00	.0010
5	3.96	3.74	.0068	4.66	4.42	.0071	1.40	1.50	.0018
6	4.82	4.61	.0083	5.42	5.37	.0086	1.70	1.90	.0026
7	5.29	5.04	.0094	5.97	5.92	.0099	2.20	2.20	.0034
8	7.18	6.41	.0172	7.45	7.60	.0171	3.20	3.30	.0049
9	7.35	6.35	.0243	4.65	7.80	.0248	3.60	3.50	.0049
10	7.34	6.25	.0312	7.76	7.92	.0320	6.81	6.81	.0104
11	7.27	6.10	.0381	7.85	8.12	.0395	8.20	8.09	.0161
12	7.19	5.93	.0458	7.95	8.39	.0466	8.57	8.20	.0221
13	7.06	5.79	.0524	8.11	8.59	.0538	8.59	8.19	.0281
14							8.53	8.17	.0338
15							8.42	8.07	.0364
16							8.16	8.05	.0419
17							8.03	8.01	.0476
18							7.92	8.01	.0533

	Specimen No. 34 $t_o = .2605$			Specimen No. 35 $t_o = .2607$			Specimen No. 36 $t_o = .2604$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.20	.40	.0003	.40	.10	.0003	.20	.40	.0003
3	.40	.60	.0005	.30	.30	.0005	.30	.50	.0005
4	.40	.50	.0005	.40	.30	.0005	.30	.50	.0005
5	.50	.60	.0008	.70	.40	.0008	.50	.80	.0008
6	.50	.60	.0010	.70	.30	.0010	.60	.70	.0008
7	1.00	1.10	.0018	1.10	1.00	.0018	1.00	1.10	.0016
8	1.40	1.50	.0026	1.70	1.30	.0023	1.60	1.50	.0023
9	1.90	2.00	.0034	1.90	1.90	.0034	1.90	2.10	.0034
10	3.20	3.10	.0050	2.90	2.90	.0047	2.80	3.10	.0047
11	3.40	3.20	.0052	3.10	2.90	.0047	3.00	3.10	.0047
12	6.49	6.60	.0107	6.86	6.58	.0107	6.55	6.75	.0104
13	7.64	7.79	.0164	8.70	8.69	.0164	8.51	8.65	.0164
14	7.82	8.02	.0219	9.13	9.11	.0222	9.27	9.01	.0224
15	7.93	8.08	.0274	9.09	9.29	.0282	9.42	8.98	.0281
16	8.00	8.19	.0333	9.03	9.43	.0341	9.49	9.02	.0336
17	7.99	8.20	.0359	9.00	9.44	.0368	9.51	9.04	.0362
18	8.02	8.20	.0417	9.10	9.54	.0420	9.46	9.08	.0404
19	8.11	8.23	.0474	8.83	9.69	.0480	9.42	9.11	.0479
20	8.21	8.31	.0529	8.80	9.68	.0532	9.48	9.17	.0539

RESIDUAL STRESS DATA

Step	Specimen No. 37 $t_o = .2591$ dH$_A$	dH$_B$	dt	Specimen No. 38 $t_o = .2595$ dH$_A$	dH$_B$	dt	Specimen No. 39 $t_o = .2588$ dH$_A$	dH$_B$	dt
1	0	0	0	0	0	0	0	0	0
2	.26	.24	.0003	.20	.25	.0003	.20	.30	.0003
3	.43	.31	.0005	.32	.41	.0005	.40	.60	.0005
4	.58	.42	.0005	.48	.54	.0005	1.10	.84	.0008
5	.61	.53	.0008	.64	.62	.0008	1.18	.95	.0008
6	.70	.57	.0008	.67	.59	.0008	1.60	1.27	.0018
7	.53	1.00	.0010	1.11	1.14	.0018	2.11	1.82	.0026
8	1.60	1.44	.0018	1.53	1.54	.0023	2.43	2.16	.0034
9	1.88	1.83	.0026	1.98	1.98	.0034	3.49	3.30	.0049
10	2.78	2.72	.0047	2.84	2.92	.0047	3.98	3.81	.0057
11	2.81	2.69	.0047	2.87	3.03	.0047	6.30	5.94	.0012
12	4.99	5.12	.0107	5.05	4.99	.0101	6.40	6.25	.0177
13	5.50	5.62	.0169	5.90	5.17	.0166	6.18	6.21	.0237
14	5.80	5.75	.0229	6.29	5.14	.0224	6.55	6.20	.0361
15	6.20	5.84	.0289	6.68	5.09	.0281	6.88	6.20	.0416
16	6.61	6.03	.0354	7.07	5.06	.0341	7.08	6.19	.0465
17	7.02	6.25	.0411	7.36	5.02	.0390	7.40	6.25	.0525
18	7.46	6.42	.0465	7.67	5.05	.0442			
19	7.66	6.60	.0517	7.87	4.88	.0494			

Step	Specimen No. 40 $t_o = .2593$ dH$_A$	dH$_B$	dt	Specimen No. 41 $t_o = .2585$ dH$_A$	dH$_B$	dt	Specimen No. 42 $t_o = .2580$ dH$_A$	dH$_B$	dt
1	0	0	0	0	0	0	0	0	0
2	.53	.61	.0003	.20	.40	.0003	.35	.30	.0003
3	.64	.74	.0005	.30	.40	.0005	.45	.40	.0005
4	.77	.84	.0005	.70	.80	.0008	.65	.70	.0005
5	.87	.96	.0008	.70	.60	.0010	.75	.50	.0008
6	.94	1.14	.0010	.80	.90	.0013	.75	.60	.0010
7	1.26	1.35	.0018	1.20	1.40	.0021	1.25	1.20	.0018
8	1.70	1.75	.0026	2.31	2.53	.0031	2.15	1.90	.0029
9	2.06	2.14	.0031	2.89	3.03	.0036	2.97	2.81	.0039
10	3.02	2.98	.0047	3.60	2.97	.0052	3.70	3.58	.0052
11	3.47	3.55	.0055	4.92	4.97	.0073	5.04	4.89	.0075
12	5.85	5.95	.0109	6.94	7.07	.0130	6.48	6.28	.0135
13	6.42	6.35	.0177	7.43	6.87	.0187	6.55	6.38	.0190
14	6.58	6.44	.0237	7.71	6.81	.0242	6.48	6.30	.0247
15	6.72	6.54	.0294	7.94	6.80	.0299	6.40	6.20	.0307
16	6.86	6.64	.0366	8.20	6.66	.0364	6.43	6.20	.0361
17	7.02	6.72	.0408	8.43	6.75	.0426	6.45	6.31	.0419
18	7.20	6.95	.0468	8.68	6.79	.0489	6.55	6.59	.0478
19	7.29	7.13	.0525	8.99	6.80	.0551	6.63	6.70	.0538

RESIDUAL STRESS DATA

Specimen No. 43, t_o = .2599; Specimen No. 44, t_o = .2597; Specimen No. 45, t_o = .2590

Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.30	.20	.0003	.30	.10	.0003	.20	.30	.0003
3	.70	.40	.0005	.40	.40	.0005	.40	.30	.0005
4	.80	.80	.0005	.80	.80	.0005	.40	.60	.0005
5	.70	.70	.0008	.70	.40	.0008	.40	.60	.0005
6	.80	.20	.0010	.90	.60	.0010	.60	.70	.0008
7	1.30	1.00	.0021	1.30	1.30	.0023	1.10	1.10	.0016
8	2.23	2.05	.0031	2.37	2.22	.0029	1.40	1.70	.0021
9	2.77	2.57	.0039	2.96	2.80	.0039	2.42	2.49	.0034
10	3.53	3.40	.0055	3.74	3.72	.0052	3.66	3.73	.0054
11	4.82	4.74	.0075	5.00	5.12	.0078	4.33	4.39	.0067
12	7.08	6.90	.0130	6.80	7.24	.0133	6.94	6.86	.0130
13	7.90	7.48	.0179	7.03	7.76	.0187	7.27	7.13	.0184
14	8.31	7.65	.0234	7.00	7.82	.0242	7.20	7.08	.0241
15	8.53	7.73	.0294	6.86	7.97	.0302	7.16	6.92	.0293
16	8.78	7.81	.0359	6.76	8.00	.0354	7.01	6.80	.0355
17	8.97	7.85	.0416	6.61	8.00	.0411	7.00	6.70	.0412
18	9.18	8.00	.0478	6.53	8.00	.0465	6.90	6.50	.0471
19	9.38	8.00	.0536	6.39	8.00	.0528	6.72	6.22	.0521

Specimen No. 46, t_o = .2588; Specimen No. 47, t_o = .2598; Specimen No. 48, t_o = .2600

Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	0	.50	.0003	0	0	.0003	0	0	.0003
3	.20	.60	.0003	.20	-.10	.0003	0	.10	.0003
4	.30	.60	.0005	.10	.10	.0005	.10	0	.0005
5	.30	.70	.0008	.40	.20	.0005	.20	.30	.0005
6	.50	.80	.0008	.60	.30	.0008	.70	.40	.0008
7	1.10	1.40	.0016	1.00	.90	.0016	1.30	1.40	.0023
8	1.60	1.80	.0023	1.40	1.30	.0023	2.20	2.20	.0034
9	2.30	2.70	.0036	2.20	2.20	.0036	3.40	3.50	.0052
10	3.53	3.88	.0052	3.00	3.20	.0052	4.53	4.50	.0065
11	3.53	3.88	.0052	3.80	3.90	.0062	8.08	7.89	.0127
12	6.15	6.73	.0104	7.24	7.35	.0117	9.49	9.29	.0182
13	7.46	8.10	.0161	9.40	9.60	.0177	9.80	9.48	.0234
14	7.79	8.24	.0220	9.83	10.04	.0231	9.93	9.55	.0291
15	7.97	8.26	.0280	9.87	10.19	.0283	9.98	9.20	.0356
16	8.12	8.41	.0339	9.91	10.27	.0343	9.96	9.29	.0419
17	8.20	8.53	.0401	9.97	10.40	.0403	9.88	9.12	.0481
18	8.40	8.63	.0456	9.88	10.49	.0458	9.90	8.90	.0536
19				9.64	10.59	.0520			

RESIDUAL STRESS DATA

Specimen No. 49, $t_o = .2590$; Specimen No. 50, $t_o = .2590$; Specimen No. 51, $t_o = .2597$

Step	No. 49 dH_A	No. 49 dH_B	No. 49 dt	No. 50 dH_A	No. 50 dH_B	No. 50 dt	No. 51 dH_A	No. 51 dH_B	No. 51 dt
1	0	0	0	0	0	0	0	0	0
2	.10	-.10	.0003	-.10	-.20	.0003	-.30	-.20	.0003
3	.30	.30	.0005	.10	.10	.0005	.10	.10	.0005
4	.40	.30	.0005	.20	-.10	.0005	0	.10	.0005
5	.50	.30	.0008	.20	.30	.0008	.60	.40	.0008
6	1.08	.86	.0010	.80	.91	.0010	.81	.86	.0010
7	1.75	1.45	.0021	1.29	1.34	.0021	1.45	1.45	.0021
8	2.40	2.03	.0028	1.74	1.95	.0026	2.02	2.02	.0029
9	2.79	2.41	.0036	2.32	2.45	.0034	2.42	2.43	.0036
10	3.62	3.28	.0052	3.29	3.47	.0052	3.45	3.57	.0052
11	4.21	3.80	.0062	3.30	3.49	.0052	4.05	4.22	.0062
12	7.68	6.93	.0117	6.93	7.32	.0114	7.63	8.03	.0127
13	10.17	9.19	.0174	9.42	9.72	.0176	10.11	10.37	.0185
14	11.05	9.97	.0233	10.37	10.71	.0230	11.32	11.23	.0242
15	11.04	9.99	.0293	10.51	10.82	.0290	11.93	11.56	.0299
16	11.06	9.93	.0357	10.46	10.85	.0352	12.42	11.74	.0359
17	10.82	9.96	.0407	10.44	10.94	.0414	12.82	11.82	.0421
18	10.42	9.90	.0474	10.32	11.10	.0479	13.00	12.01	.0486
19	10.22	9.85	.0544	10.27	11.15	.0546	13.05	12.16	.0554

Specimen No. 52, $t_o = .2602$; Specimen No. 53, $t_o = .2596$; Specimen No. 54, $t_o = .2595$

Step	No. 52 dH_A	No. 52 dH_B	No. 52 dt	No. 53 dH_A	No. 53 dH_B	No. 53 dt	No. 54 dH_A	No. 54 dH_B	No. 54 dt
1	0	0	0	0	0	0	0	0	0
2	0	-.20	.0003	.11	.10	.0003	.12	.09	.0003
3	.30	.10	.0003	.16	.20	.0005	.20	.40	.0003
4	.40	.30	.0005	.30	.27	.0005	.30	.31	.0005
5	.60	.30	.0008	.40	.40	.0008	.41	.42	.0005
6	1.03	.91	.0010	.54	.54	.0009	.52	.54	.0008
7	1.65	1.52	.0021	1.87	1.89	.0031	1.92	1.82	.0031
8	2.14	1.96	.0026	2.36	2.38	.0093	2.33	2.26	.0036
9	2.62	2.32	.0034	3.13	3.16	.0052	3.10	3.07	.0049
10	3.54	3.33	.0049	4.85	4.88	.0078	4.51	4.53	.0073
11	3.53	3.32	.0049	6.01	6.08	.0094	5.45	5.57	.0091
12	7.42	7.07	.0112	10.09	10.09	.0166	9.25	9.37	.0148
13	10.42	9.72	.0172	11.74	11.62	.0226	11.98	11.82	.0216
14	12.05	10.83	.0231	12.13	11.69	.0291	12.54	12.15	.0273
15	12.67	11.00	.0286	12.28	11.58	.0348	12.57	11.95	.0348
16	13.02	10.92	.0351	12.45	11.37	.0416	12.55	11.70	.0416
17	13.42	10.81	.0408	12.50	11.12	.0473	12.38	11.36	.0418
18	13.85	10.71	.0476	12.57	10.83	.0536	12.22	11.04	.0543
19	14.42	10.63	.0546						

RESIDUAL STRESS DATA

Specimen No. 55, $t_o = .2591$; Specimen No. 56, $t_o = .2596$; Specimen No. 57, $t_o = .2604$

Step	55 dH_A	55 dH_B	55 dt	56 dH_A	56 dH_B	56 dt	57 dH_A	57 dH_B	57 dt
1	0	0	0	0	0	0	0	0	0
2	.11	.15	.0003	.17	.17	.0003	.13	.10	.0003
3	.19	.26	.0005	.32	.22	.0005	.16	.16	.0005
4	.30	.32	.0008	.37	.36	.0005	.26	.24	.0005
5	.42	.45	.0010	.45	.43	.0005	.25	.21	.0005
6	.52	.56	.0013	.53	.49	.0008	.44	.38	.0008
7	1.58	1.73	.0031	2.11	1.60	.0028	.82	.77	.0016
8	2.01	2.19	.0039	1.84	1.94	.0034	1.63	1.51	.0026
9	2.76	2.96	.0052	2.59	2.70	.0047	2.28	2.27	.0042
10	4.34	4.53	.0078	4.11	4.18	.0073	3.66	3.61	.0060
11	5.25	5.40	.0093	5.31	5.39	.0091	5.70	5.63	.0094
12	8.70	8.84	.0166	8.37	8.50	.0153	8.77	8.80	.0156
13	10.07	9.70	.0243	9.61	9.65	.0210	10.06	10.31	.0221
14	10.30	9.67	.0298	9.76	9.73	.0275	10.21	10.75	.0291
15	10.43	9.46	.0365	9.72	9.63	.0337	10.26	10.98	.0354
16	10.50	9.26	.0433	9.54	9.51	.0396	10.30	11.30	.0419
17	10.65	9.05	.0502	9.41	9.34	.0456	10.38	11.50	.0478
18	10.65	8.71	.0518	9.08	9.19	.0521	10.36	11.83	.0549

Specimen No. 58, $t_o = .2590$; Specimen No. 59, $t_o = .2591$; Specimen No. 60, $t_o = .2584$

Step	58 dH_A	58 dH_B	58 dt	59 dH_A	59 dH_B	59 dt	60 dH_A	60 dH_B	60 dt
1	0	0	0	0	0	0	0	0	0
2	.11	.09	.0003	.07	.16	.0003	.09	.10	.0003
3	.17	.14	.0005	.16	.28	.0003	.16	.18	.0003
4	.17	.15	.0005	.19	.36	.0005	.20	.25	.0005
5	.14	.19	.0005	.36	.49	.0008	.20	.27	.0005
6	.25	.31	.0008	.49	.63	.0008	.34	.40	.0008
7	.73	.80	.0016	.98	1.10	.0018	.68	.74	.0013
8	1.34	1.43	.0023	1.73	1.84	.0031	1.43	1.52	.0026
9	2.11	2.25	.0039	2.48	2.55	.0044	2.32	2.31	.0039
10	3.54	3.67	.0062	4.12	4.35	.0070	4.11	3.92	.0067
11	5.40	5.43	.0091	6.22	6.16	.0101	6.21	6.04	.0098
12	9.34	8.68	.0158	9.90	9.76	.0166	9.75	9.57	.0165
13	10.11	9.77	.0223	11.58	11.47	.0233	11.13	10.85	.0227
14	10.33	9.83	.0282	11.94	11.76	.0290	11.34	11.08	.0295
15	10.33	9.86	.0339	12.01	11.74	.0352	11.40	11.06	.0354
16	10.42	9.80	.0396	12.03	11.53	.0425	11.20	10.95	.0413
17	10.40	9.87	.0466	11.93	11.37	.0482	11.33	10.78	.0483
18	10.30	9.79	.0528	11.50	11.16	.0539	11.22	10.60	.0561

RESIDUAL STRESS DATA

Step	Specimen No. 61, t_o = .2609 dH_A	dH_B	dt	Specimen No. 62, t_o = .2582 dH_A	dH_B	dt	Specimen No. 63, t_o = .2602 dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.13	.15	.0003	.18	.20	.0003	.24	.39	.0003
3	.24	.26	.0005	.28	.35	.0005	.32	.49	.0005
4	.40	.38	.0008	.42	.42	.0008	.46	.62	.0009
5	.47	.48	.0008	.51	.41	.0008	.56	.69	.0010
6	.57	.60	.0010	.63	.57	.0010	.65	.80	.0010
7	1.14	1.18	.0018	1.16	1.13	.0021	1.23	1.34	.0021
8	1.77	1.79	.0029	1.85	1.79	.0031	1.84	1.91	.0031
9	2.27	2.28	.0039	2.36	2.32	.0039	2.32	2.42	.0039
10	3.73	3.80	.0060	3.48	3.35	.0057	3.71	3.87	.0060
11	3.74	3.81	.0060	4.21	4.13	.0070	4.57	4.61	.0073
12	7.14	7.17	.0117	8.18	8.14	.0130	8.30	8.81	.0133
13	10.34	10.42	.0183	10.87	10.93	.0194	11.43	12.10	.0195
14	11.83	11.88	.0237	12.26	12.25	.0253	12.89	13.97	.0260
15	12.34	12.34	.0292	12.64	12.59	.0312	13.27	14.71	.0325
16	12.67	12.53	.0352	12.92	12.65	.0380	13.36	15.00	.0414
17	13.04	12.66	.0417	12.96	12.62	.0439	13.17	14.92	.0461
18	13.44	12.84	.0480	12.95	12.45	.0504	13.07	15.12	.0523
19	13.59	12.92	.0524	12.87	12.32	.0555	13.13	15.23	.0570

Step	Specimen No. 64, t_o = .2581 dH_A	dH_B	dt	Specimen No. 65, t_o = .2589 dH_A	dH_B	dt	Specimen No. 66, t_o = .2585 dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.21	.14	.0003	.09	.17	.0003	.16	.16	.0003
3	.28	.20	.0005	.29	.30	.0005	.33	.27	.0005
4	.41	.33	.0007	.42	.42	.0008	.37	.37	.0008
5	.46	.38	.0007	.52	.58	.0010	.56	.60	.0010
6	.63	.54	.0010	.70	.73	.0013	.75	.70	.0013
7	1.05	1.09	.0018	1.32	1.38	.0023	1.30	1.35	.0023
8	1.74	1.64	.0028	1.79	1.76	.0031	1.78	1.82	.0031
9	2.21	2.22	.0036	2.15	2.20	.0036	2.17	2.86	.0039
10	3.76	3.90	.0057	3.32	3.35	.0054	3.05	3.26	.0054
11	4.49	4.77	.0070	3.76	3.85	.0065	3.66	3.77	.0065
12	8.00	8.53	.0129	8.31	8.39	.0132	8.47	8.41	.0134
13	11.18	11.99	.0194	12.57	12.34	.0199	12.59	12.56	.0202
14	13.00	13.64	.0250	14.91	14.33	.0259	15.07	14.86	.0271
15	13.90	14.50	.0312	16.08	14.91	.0326	16.06	15.54	.0339
16	14.37	15.10	.0377	16.69	15.03	.0388	16.57	15.76	.0408
17	14.68	15.55	.0436	16.99	14.97	.0448	16.97	15.96	.0460
18	14.84	15.92	.0496	17.29	14.70	.0520	17.38	16.05	.0517
19	14.92	16.14	.0552						

RESIDUAL STRESS DATA

	Specimen No. 67 $t_o = .2582$			Specimen No. 68 $t_o = .2593$			Specimen No. 69 $t_o = .2598$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.14	.16	.0003	.12	.13	.0003	.15	.16	.0003
3	.29	.31	.0005	.24	.24	.0005	.25	.26	.0005
4	.43	.44	.0008	.41	.45	.0008	.34	.35	.0005
5	.53	.56	.0010	.51	.56	.0010	.45	.46	.0008
6	.63	.65	.0013	.64	.67	.0013	.58	.62	.0010
7	1.24	1.22	.0023	1.23	1.24	.0023	1.30	1.35	.0023
8	1.66	1.71	.0031	1.62	1.63	.0029	1.72	1.75	.0031
9	1.95	2.14	.0036	2.03	2.01	.0036	2.16	2.26	.0039
10	3.01	3.21	.0054	3.12	3.12	.0054	4.10	4.04	.0068
11	3.07	3.22	.0054	3.69	3.60	.0062	5.62	5.37	.0088
12	7.57	7.88	.0119	8.39	8.33	.0135	10.54	10.34	.0158
13	11.33	11.71	.0186	11.87	11.96	.0205	14.11	13.82	.0223
14	13.07	13.54	.0245	13.72	13.83	.0275	16.12	15.65	.0275
15	14.05	14.29	.0310	14.32	14.48	.0345	16.75	16.20	.0346
16	14.44	14.56	.0372	14.68	14.64	.0412	16.94	16.47	.0413
17	16.44	16.67	.0442	16.64	16.64	.0462	16.90	16.58	.0483
18	14.74	14.86	.0522	14.88	14.63	.0534	16.73	16.50	.0551

	Specimen No. 70 $t_o = .2598$			Specimen No. 71 $t_o = .2584$			Specimen No. 72 $t_o = .2600$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.11	.08	.0003	.20	.16	.0003	.18	.16	.0003
3	.16	.18	.0005	.26	.20	.0005	.25	.20	.0005
4	.16	.21	.0005	.33	.27	.0005	.33	.38	.0005
5	.29	.29	.0008	.44	.36	.0008	.40	.41	.0008
6	.33	.37	.0010	.54	.46	.0010	.50	.60	.0010
7	1.47	1.41	.0026	1.56	1.51	.0026	1.19	1.29	.0021
8	2.07	2.11	.0036	2.24	2.16	.0036	1.78	1.82	.0031
9	2.48	2.59	.0044	2.72	2.76	.0044	2.31	2.21	.0039
10	4.30	4.39	.0070	4.80	4.80	.0075	4.50	4.50	.0073
11	5.72	5.74	.0094	6.54	6.52	.0098	5.98	5.98	.0094
12	9.74	9.88	.0151	11.86	11.51	.0168	9.32	9.82	.0151
13	13.97	13.56	.0218	16.37	15.83	.0240	13.79	13.99	.0213
14	16.43	15.41	.0283	18.66	17.82	.0305	17.12	17.25	.0283
15	17.67	15.99	.0346	19.88	18.45	.0364	18.57	18.50	.0346
16	18.38	16.19	.0405	20.76	18.84	.0432	19.31	18.98	.0413
17	18.61	16.29	.0463	21.56	19.08	.0504	19.72	19.24	.0478
18	18.77	16.27	.0520	22.17	19.30	.0563	19.92	19.42	.0543

RESIDUAL STRESS DATA

	Specimen No. 73 $t_o = .2583$			Specimen No. 74 $t_c = .2608$			Specimen No. 75 $t_o = .2595$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.80	.79	.0015	.83	.79	.0016	1.02	1.14	.0018
3	1.89	1.93	.0036	2.10	1.83	.0037	1.99	2.17	.0036
4	2.61	2.68	.0049	2.96	2.79	.0050	2.90	3.24	.0049
5	6.73	6.92	.0116	6.94	6.77	.0112	7.29	7.86	.0114
6	10.63	9.59	.0188	10.63	9.57	.0167	11.36	12.26	.0176
7	13.50	12.97	.0248	13.83	12.20	.0230	14.53	15.46	.0236
8	15.02	14.07	.0302	15.58	13.44	.0290	16.63	17.34	.0288
9	15.94	14.47	.0364	16.30	13.80	.0352	17.94	18.44	.0348
10	16.45	14.60	.0424	16.57	13.80	.0417	18.59	18.99	.0410
11	16.90	14.69	.0486	16.76	13.65	.0488	19.02	19.21	.0470
12	17.33	14.68	.0553	17.02	13.98	.0553	19.16	19.42	.0534

	Specimen No. 76 $t_o = .2590$			Specimen No. 77 $t_o = .2589$			Specimen No. 78 $t_o = .2585$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	1.10	1.04	.0021	1.16	1.15	.0018	.88	.98	.0016
3	2.17	2.12	.0039	2.18	2.08	.0034	2.01	2.08	.0034
4	3.09	3.06	.0052	3.07	2.79	.0044	2.89	2.90	.0044
5	7.74	7.46	.0114	6.93	6.81	.0101	6.77	6.90	.0098
6	12.12	11.79	.0179	11.51	11.39	.0163	11.56	11.79	.0163
7	15.35	15.04	.0243	16.49	16.56	.0238	16.73	16.50	.0235
8	17.14	16.92	.0306	19.69	19.15	.0303	19.95	19.37	.0292
9	17.76	17.69	.0365	21.69	20.45	.0360	21.78	20.60	.0354
10	17.99	18.08	.0433	23.10	20.93	.0422	22.79	21.23	.0414
11	18.11	18.48	.0495	23.97	21.22	.0479	23.46	21.47	.0476
12	18.16	18.68	.0562	24.50	21.29	.0538	23.99	21.62	.0543

RESIDUAL STRESS DATA

Step	Specimen No. 79 $t_o = .2607$ dH$_A$	dH$_B$	dt	Specimen No. 80 $t_o = .2584$ dH$_A$	dH$_B$	dt	Specimen No. 81 $t_o = .2591$ dH$_A$	dH$_B$	dt
1	0	0	0	0	0	0	0	0	0
2	.99	1.06	.0019	.76	.79	.0016	1.30	1.27	.0023
3	1.61	1.76	.0032	1.79	1.91	.0034	2.57	2.52	.0041
4	2.20	2.45	.0043	2.44	2.57	.0044	3.32	3.26	.0054
5	5.98	6.17	.0098	6.53	6.85	.0103	8.09	7.53	.0117
6	10.23	10.30	.0160	10.82	11.42	.0168	12.17	11.93	.0176
7	15.01	15.02	.0234	14.87	15.76	.0233	15.68	15.44	.0225
8	17.96	17.85	.0295	17.34	18.75	.0295	19.11	19.01	.0288
9	20.00	19.69	.0359	18.83	20.64	.0362	21.20	21.37	.0352
10	21.03	20.64	.0418	19.47	21.55	.0424	22.18	22.63	.0402
11	21.73	21.05	.0474	19.86	22.04	.0488	22.83	23.46	.0461
12	22.29	21.39	.0537	19.93	22.24	.0550	22.98	23.83	.0521

Step	Specimen No. 82 $t_o = .2602$ dH$_A$	dH$_B$	dt	Specimen No. 83 $t_o = .2591$ dH$_A$	dH$_B$	dt	Specimen No. 84 $t_o = .2601$ dH$_A$	dH$_B$	dt
1	0	0	0	0	0	0	0	0	0
2	1.24	1.30	.0021	1.16	1.29	.0021	.96	1.37	.0023
3	2.24	2.28	.0039	2.47	2.46	.0041	2.42	2.56	.0042
4	2.84	3.00	.0047	3.37	3.44	.0054	3.01	3.13	.0049
5	7.20	7.51	.0107	7.35	7.60	.0109	7.48	7.76	.0112
6	11.75	12.30	.0172	12.76	13.12	.0179	11.85	12.31	.0172
7	15.85	16.57	.0229	17.47	17.80	.0233	16.65	17.38	.0231
8	18.97	19.90	.0294	22.26	22.32	.0301	21.27	22.38	.0297
9	20.66	22.02	.0354	25.57	25.43	.0365	24.32	25.74	.0359
10	21.44	23.04	.0406	27.65	27.30	.0428	26.24	27.92	.0421
11	21.82	23.64	.0468	28.82	28.27	.0490	28.42	29.35	.0479
12	21.92	23.93	.0523	29.54	28.83	.0549	28.46	30.27	.0536

RESIDUAL STRESS DATA

Step	Specimen No. 85 t_o = .2596			Specimen No. 86 t_o = .2586			Specimen No. 87 t_o = .2578		
	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	1.21	1.32	.0021	1.21	1.11	.0021	1.22	1.21	.0021
3	2.99	3.01	.0047	2.57	2.52	.0044	2.52	2.49	.0039
4	4.45	4.43	.0068	3.79	3.75	.0062	3.66	3.69	.0059
5	9.07	9.17	.0122	9.51	9.40	.0129	7.65	7.90	.0111
6	14.52	14.64	.0184	15.28	14.97	.0194	14.02	14.29	.0175
7	19.23	19.08	.0239	20.14	19.46	.0256	19.66	19.61	.0235
8	24.16	23.95	.0304	24.98	24.16	.0318	24.96	24.99	.0299
9	27.95	27.95	.0371	28.29	27.34	.0385	29.29	29.69	.0368
10	31.50	30.81	.0434	31.21	29.86	.0453	32.58	32.96	.0428
11	33.80	32.86	.0493	32.75	30.97	.0517	34.78	35.22	.0497

Step	Specimen No. 88 t_o = .2603			Specimen No. 89 t_o = .2598			Specimen No. 90 t_o = .2610		
	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	1.20	1.33	.0021	2.40	2.35	.0042	1.96	2.24	.0037
3	2.89	2.87	.0047	3.05	3.13	.0052	2.86	3.08	.0050
4	4.36	4.32	.0068	5.03	5.11	.0080	4.61	5.12	.0078
5	9.76	9.81	.0130	10.55	10.88	.0153	10.83	11.49	.0154
6	15.13	15.30	.0193	16.33	16.88	.0216	16.33	16.13	.0214
7	20.48	20.71	.0255	22.07	22.89	.0281	21.38	22.39	.0271
8	25.46	25.43	.0318	26.95	27.73	.0338	25.84	26.99	.0331
9	29.51	29.51	.0390	31.96	32.56	.0405	29.99	31.20	.0402
10	32.31	32.12	.0458	35.38	35.39	.0468	32.63	33.88	.0465
11	33.83	33.65	.0518	38.90	38.60	.0556	34.32	35.86	.0540

RESIDUAL STRESS DATA

	Specimen No. 91 $t_o = .2508$			Specimen No. 92 $t_o = .2515$			Specimen No. 93 $t_o = .2505$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.49	.51	.0008	.47	.47	.0008	.09	.05	.0003
3	.88	.90	.0013	.79	.79	.0013	.21	.20	.0003
4	1.38	1.42	.0020	1.31	1.39	.0018	.37	.37	.0003
5	2.42	2.44	.0036	2.28	2.38	.0033	.47	.45	.0005
6	2.29	3.08	.0043	2.81	2.96	.0044	.56	.56	.0008
7	3.43	3.53	.0056	3.24	3.40	.0051	.76	.66	.0010
8	3.60	3.73	.0072	3.50	3.70	.0069	1.51	1.50	.0020
9	3.60	3.72	.0052	3.56	3.71	.0082	1.51	1.50	.0033
10	3.60	3.72	.0097	3.58	3.72	.0095	3.10	3.20	.0043
11	3.60	3.72	.0123	3.58	3.71	.0118	3.67	3.80	.0060
12	3.62	3.75	.0133	3.60	3.72	.0128	3.86	3.98	.0080
13	3.62	3.75	.0181	3.60	3.72	.0174	3.82	3.90	.0133
14	3.62	3.75	.0230	3.60	3.72	.0225	3.78	3.90	.0190
15	3.67	3.78	.0276	3.61	3.72	.0277	3.78	3.85	.0240
16	3.69	3.79	.0327	3.60	3.72	.0325	3.71	3.78	.0306
17	3.74	3.82	.0381	3.62	3.74	.0377	3.68	3.75	.0363
18	3.72	3.85	.0437	3.63	3.75	.0433	3.63	3.64	.0423
19	3.73	3.84	.0488	3.70	3.79	.0487	3.58	3.58	.0478
20							3.47	3.46	.0534

	Specimen No. 94 $t_o = .2502$			Specimen No. 95 $t_o = .2501$			Specimen No. 96 $t_o = .2502$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.07	.08	.0003	.29	.33	.0005	.01	0	.0002
3	.27	.28	.0003	1.33	1.33	.0020	.09	.10	.0002
4	.37	.38	.0005	2.08	2.15	.0030	.24	.25	.0002
5	.58	.63	.0008	2.93	2.95	.0040	.37	.36	.0005
6	.79	.79	.0010	4.03	4.00	.0060	.46	.45	.0007
7	1.00	.81	.0013	4.33	4.25	.0080	.66	.65	.0090
8	1.80	1.84	.0025	4.34	4.25	.0138	1.39	1.52	.0018
9	1.50	1.86	.0035	4.28	4.20	.0168	2.26	2.35	.0030
10	3.33	3.48	.0045	4.38	4.28	.0250	2.98	3.11	.0039
11	3.89	4.10	.0069	4.31	4.24	.0305	3.96	4.20	.0060
12	3.93	4.15	.0085	4.33	4.25	.0363	4.24	4.45	.0076
13	3.83	4.06	.0163	4.31	4.23	.0425	4.26	4.47	.0127
14	3.83	3.96	.0203	4.33	4.23	.0485	4.21	4.45	.0182
15	3.68	3.91	.0260	4.28	4.08	.0548	4.23	4.46	.0230
16	3.54	3.76	.0328				4.14	4.40	.0283
17	3.60	3.74	.0383				4.16	4.41	.0336
18	3.57	3.66	.0440				4.06	4.35	.0389
19	3.47	3.53	.0495				4.06	4.35	.0444
20	3.41	3.45	.0548				3.96	4.28	.0490

RESIDUAL STRESS DATA

Step	Specimen No. 97 $t_o = .2502$ dH$_A$	dH$_B$	dt	Specimen No. 98 $t_o = .2502$ dH$_A$	dH$_B$	dt	Specimen No. 99 $t_o = .2502$ dH$_A$	dH$_B$	dt
1	0	0	0	0	0	0	0	0	0
2	.05	.05	.0003	.04	.09	.0003	.10	.10	.0003
3	.09	.13	.0003	.14	.14	.0003	.24	.22	.0003
4	.17	.20	.0003	.30	.25	.0005	.37	.40	.0005
5	.37	.35	.0005	.34	.37	.0005	.57	.58	.0008
6	.55	.58	.0008	.42	.47	.0008	.75	.75	.0010
7	.75	.80	.0013	.54	.58	.0010	.80	.85	.0013
8	1.70	1.58	.0023	1.67	1.90	.0028	1.73	1.68	.0020
9	2.22	2.12	.0033	2.27	2.59	.0038	2.33	2.27	.0030
10	2.89	2.70	.0045	2.63	2.99	.0048	3.13	3.00	.0040
11	3.20	3.05	.0073	2.83	3.20	.0063	3.83	3.78	.0065
12	3.17	3.03	.0083	2.92	3.30	.0083	3.85	3.80	.0093
13	3.17	3.03	.0138	2.91	3.25	.0138	3.85	3.80	.0150
14	3.10	3.00	.0208	2.92	3.30	.0213	3.77	3.78	.0215
15	3.13	3.02	.0265	2.95	3.30	.0298	3.74	3.77	.0278
16	3.02	2.93	.0333	2.87	3.30	.0343	3.67	3.73	.0338
17	2.99	2.93	.0395	2.92	3.30	.0395	3.63	3.67	.0388
18	2.96	2.90	.0450	2.92	3.25	.0453	3.55	3.70	.0448
19	2.82	2.80	.0516	2.90	3.25	.0503	3.54	3.67	.0505

Step	Specimen No. 100 $t_o = .2503$ dH$_A$	dH$_B$	dt	Specimen No. 101 $t_o = .2479$ dH$_A$	dH$_B$	dt	Specimen No. 102 $t_o = .2506$ dH$_A$	dH$_B$	dt
1	0	0	0	0	0	0	0	0	0
2	.05	.06	.0003	.10	.08	.0002	.21	.28	.0003
3	.15	.19	.0003	.30	.23	.0002	.48	.48	.0008
4	.40	.38	.0005	.42	.41	.0005	1.23	1.18	.0018
5	.55	.58	.0008	.80	.66	.0010	1.80	1.81	.0026
6	.75	.73	.0013	1.20	1.01	.0012	2.50	2.55	.0036
7	.90	.88	.0015	.97	.96	.0015	3.22	3.25	.0046
8	1.65	1.63	.0020	2.12	2.13	.0030	4.12	4.15	.0061
9	2.45	2.53	.0035	3.15	3.01	.0042	4.56	4.56	.0069
10	3.15	3.37	.0048	3.97	3.91	.0057	5.19	5.28	.0084
11	3.56	3.84	.0078	4.88	4.84	.0077	5.39	5.49	.0102
12	3.58	3.86	.0108	5.21	5.13	.0084	5.39	5.49	.0112
13	3.52	3.82	.0163	5.38	5.31	.0144	5.43	5.56	.0156
14	3.49	3.78	.0240	5.25	5.20	.0206	5.49	5.58	.0197
15	3.39	3.71	.0300	5.22	5.17	.0258	5.51	5.61	.0256
16	3.38	3.71	.0375	5.21	5.15	.0315	5.60	5.68	.0317
17	3.27	3.68	.0431	5.18	5.14	.0367	5.59	5.67	.0368
18	3.20	3.59	.0491	5.13	5.10	.0438	5.60	6.71	.0417
19	3.05	3.49	.0511	5.12	5.11	.0503	5.63	5.77	.0447
20				5.21	5.20	.0558			

RESIDUAL STRESS DATA

	Specimen No. 103 $t_o = .2500$			Specimen No. 104 $t_o = .2500$			Specimen No. 105 $t_o = .2512$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.23	.15	.0003	1.34	1.31	.0020	1.65	1.76	.0023
3	.23	.15	.0003	2.90	3.00	.0038	2.87	3.07	.0040
4	.33	.30	.0005	4.35	4.47	.0052	3.71	3.93	.0053
5	.46	.35	.0005	5.68	5.95	.0102	5.92	6.25	.0101
6	.68	.50	.0008	5.59	5.87	.0147	5.90	6.21	.0151
7	.73	.70	.0010	5.69	5.88	.0202	5.83	6.19	.0196
8	1.11	1.10	.0018	5.58	5.80	.0278	5.82	6.16	.0249
9	1.71	1.71	.0025	5.48	5.69	.0302	5.88	6.22	.0294
10	2.23	2.30	.0033	5.39	5.61	.0357	5.84	6.17	.0349
11	3.96	4.05	.0053	5.29	5.51	.0405	5.84	6.16	.0394
12	5.13	5.40	.0073	5.10	5.36	.0457	5.81	6.12	.0447
13	6.04	6.43	.0120				5.79	6.07	.0500
14	6.11	6.46	.0183						
15	6.03	6.42	.0235						
16	6.09	6.45	.0295						
17	6.02	6.40	.0345						
18	6.02	6.39	.0413						
19	6.02	6.42	.0480						
20	6.07	6.48	.0543						

	Specimen No. 106 $t_o = .2508$			Specimen No. 107 $t_o = .2512$			Specimen No. 108 $t_o = .2499$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	2.20	2.20	.0020	1.70	1.67	.0023	1.77	1.82	.0025
3	3.45	3.36	.0035	3.09	3.09	.0043	3.09	3.08	.0042
4	4.36	4.26	.0045	3.80	3.76	.0050	3.83	3.90	.0052
5	6.87	6.94	.0095	6.72	6.63	.0100	6.66	6.43	.0095
6	6.86	6.96	.0143	6.93	6.78	.0153	6.91	6.52	.0147
7	6.77	6.87	.0186	6.86	6.70	.0209	6.84	6.28	.0192
8	6.68	6.77	.0230	6.80	6.66	.0256	6.82	6.43	.0242
9	6.79	6.83	.0286	6.87	6.75	.0307	6.86	6.52	.0292
10	6.68	6.68	.0344	6.79	6.66	.0364	6.85	6.44	.0347
11	6.60	6.56	.0392	6.75	6.65	.0417	6.83	6.42	.0392
12	6.51	6.47	.0454	6.63	6.52	.0472	6.74	6.33	.0442
13	6.45	6.33	.0509	6.60	6.49	.0523	6.73	6.31	.0495

RESIDUAL STRESS DATA

	Specimen No. 109 $t_o = .2504$			Specimen No. 110 $t_o = .2512$			Specimen No. 111 $t_o = .2498$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.03	.05	.0005	.01	.02	.0003	.04	.05	.0003
3	.13	.16	.0005	.13	.13	.0005	.18	.16	.0003
4	.25	.28	.0005	.18	.20	.0005	.25	.25	.0005
5	.32	.37	.0008	.40	.24	.0005	.32	.35	.0005
6	.42	.45	.0008	.44	.37	.0008	.44	.46	.0008
7	2.03	2.10	.0030	2.09	2.06	.0030	1.87	1.87	.0028
8	2.75	2.81	.0040	2.78	2.79	.0038	2.62	2.65	.0038
9	3.38	3.34	.0045	3.40	3.42	.0040	3.29	3.27	.0045
10	4.38	4.37	.0060	4.30	4.31	.0060	4.45	4.48	.0063
11	5.34	5.38	.0088	5.34	5.35	.0085	5.71	5.67	.0085
12	5.50	5.36	.0135	5.53	5.54	.0138	5.99	5.87	.0138
13	5.38	5.17	.0185	5.58	5.53	.0191	5.91	5.81	.0188
14	5.19	5.10	.0234	5.43	5.47	.0239	5.82	5.76	.0240
15	5.16	5.16	.0290	5.52	5.43	.0311	5.80	5.70	.0290
16	5.80	4.98	.0338	5.54	5.44	.0337	5.73	5.67	.0343
17	4.91	4.80	.0398	5.52	5.32	.0394	5.64	5.58	.0401
18	4.74	4.66	.0458	5.55	5.45	.0450	5.51	5.51	.0463
19	4.61	4.49	.0511	5.54	5.44	.0510	5.43	5.36	.0516

	Specimen No. 112 $t_o = .2509$			Specimen No. 113 $t_o = .2510$			Specimen No. 114 $t_o = .2510$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.05	.03	.0003	.20	.13	.0003	.19	.20	.0003
3	.16	.13	.0003	.28	.25	.0003	.30	.31	.0005
4	.28	.25	.0005	.39	.33	.0008	.37	.39	.0005
5	.37	.32	.0005	.63	.54	.0008	.54	.54	.0008
6	.45	.42	.0008	.60	.49	.0010	.60	.61	.0010
7	2.10	2.03	.0030	1.21	1.05	.0018	1.29	1.24	.0020
8	2.81	2.75	.0040	1.59	1.43	.0023	1.63	1.66	.0025
9	3.34	3.38	.0048	2.06	1.87	.0030	2.23	2.19	.0033
10	4.37	4.38	.0060	4.08	3.94	.0058	4.33	4.30	.0058
11	5.38	5.34	.0088	5.14	5.20	.0075	5.49	5.53	.0078
12	5.36	5.50	.0138	6.44	6.47	.0120	6.49	6.40	.0123
13	5.17	5.38	.0186	6.43	6.44	.0173	6.34	6.37	.0173
14	5.10	5.29	.0238	6.40	6.44	.0221	6.36	6.38	.0223
15	5.06	5.16	.0291	6.40	6.38	.0271	6.34	6.33	.0281
16	4.98	5.08	.0346	6.42	6.34	.0324	6.35	6.30	.0331
17	4.80	4.91	.0407	6.40	6.32	.0374	6.32	6.28	.0379
18	4.66	4.74	.0467	6.39	6.26	.0427	6.31	6.24	.0432
19	4.49	4.61	.0522	6.36	6.27	.0479	6.36	6.25	.0487
20				6.38	6.27	.0532	6.35	6.23	.0540

RESIDUAL STRESS DATA

	Specimen No. 115 $t_o = .2503$			Specimen No. 116 $t_o = .2512$			Specimen No. 117 $t_o = .2491$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.18	.16	.0003	.20	.19	.0003	.08	.12	.0002
3	.35	.24	.0005	.31	.30	.0005	.26	.33	.0005
4	.36	.30	.0005	.39	.37	.0005	.41	.43	.0008
5	.50	.44	.0008	.54	.54	.0008	.66	.63	.0010
6	.63	.63	.0010	.61	.60	.0010	.80	.85	.0012
7	1.33	1.19	.0020	1.24	1.29	.0020	1.18	1.28	.0017
8	1.75	1.55	.0025	1.56	1.33	.0025	1.75	1.83	.0025
9	2.39	2.23	.0033	2.19	2.23	.0033	2.43	2.54	.0035
10	4.55	4.29	.0060	4.30	4.33	.0058	4.24	4.39	.0057
11	5.87	5.53	.0080	5.43	5.49	.0078	5.72	5.90	.0075
12	6.96	6.40	.0123	6.40	6.39	.0118	7.51	7.69	.0125
13	6.95	6.36	.0168	6.37	6.34	.0171	7.56	7.77	.0174
14	6.88	6.23	.0215	6.38	6.36	.0224	7.56	7.78	.0227
15	6.77	6.19	.0270	6.33	6.34	.0274	7.66	7.82	.0277
16	6.74	6.09	.0303	6.30	6.33	.0324	7.53	7.75	.0326
17	6.67	6.02	.0380	6.28	6.36	.0377	7.52	7.69	.0379
18	6.57	5.92	.0436	6.24	6.37	.0435	7.59	7.68	.0431
19	6.59	5.83	.0486	6.25	6.34	.0480	7.58	7.66	.0488
20	6.52	5.80	.0536	6.23	6.35	.0533	7.57	7.70	.0538

	Specimen No. 118 $t_o = .2508$			Specimen No. 119 $t_o = .2510$			Specimen No. 120 $t_o = .2509$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.10	.11	.0003	.21	.11	.0003	.16	.14	.0003
3	.30	.25	.0005	.39	.33	.0005	.26	.25	.0005
4	.43	.43	.0008	.53	.47	.0005	.36	.27	.0008
5	.60	.63	.0010	.79	.74	.0010	.64	.61	.0010
6	.74	.69	.0010	.89	.88	.0013	.77	.75	.0013
7	1.12	1.03	.0018	1.21	1.19	.0018	1.21	1.26	.0018
8	1.69	1.68	.0025	1.87	1.69	.0028	1.79	1.82	.0028
9	2.28	2.11	.0033	2.48	2.49	.0035	2.37	2.40	.0035
10	4.12	4.05	.0055	4.39	4.30	.0058	4.53	4.47	.0060
11	5.42	5.54	.0073	5.60	5.50	.0078	5.74	5.76	.0078
12	7.66	7.64	.0123	8.49	8.43	.0126	8.52	8.52	.0130
13	7.67	7.68	.0178	8.57	8.52	.0173	8.63	8.59	.0181
14	7.60	7.59	.0226	8.48	8.48	.0218	8.57	8.53	.0231
15	7.88	7.61	.0271	8.16	8.31	.0261	8.58	8.38	.0281
16	7.53	7.43	.0324	8.19	8.27	.0314	8.58	8.41	.0329
17	7.42	7.31	.0379	8.13	8.12	.0366	8.57	8.39	.0381
18	7.25	7.21	.0434	7.96	8.01	.0424	8.56	8.12	.0434
19	7.15	7.09	.0487	7.80	7.87	.0479	8.52	8.14	.0472
20	7.02	6.96	.0539	7.67	7.73	.0535	8.44	8.02	.0544

RESIDUAL STRESS DATA

Step	Specimen No. 121 $t_o = .2494$ dH$_A$	dH$_B$	dt	Specimen No. 122 $t_o = .2496$ dH$_A$	dH$_B$	dt	Specimen No. 123 $t_o = .2511$ dH$_A$	dH$_B$	dt
1	0	0	0	0	0	0	0	0	0
2	.10	.04	.0003	.05	.10	.0001	.16	.13	.0003
3	.22	.20	.0003	.23	.19	.0001	.24	.23	.0005
4	.34	.37	.0008	.34	.34	.0005	.37	.41	.0008
5	.49	.52	.0008	.55	.60	.0008	.61	.63	.0008
6	.61	.62	.0010	.61	.66	.0010	.70	.70	.0010
7	1.10	1.15	.0017	1.20	1.24	.0017	1.35	1.30	.0018
8	1.91	1.85	.0027	1.98	1.96	.0027	2.09	2.05	.0028
9	2.50	2.45	.0035	2.59	2.63	.0035	2.65	2.76	.0035
10	3.45	3.47	.0047	3.81	3.72	.0047	3.90	3.75	.0050
11	3.45	3.55	.0047	4.52	4.58	.0060	3.88	3.72	.0050
12	6.89	7.25	.0092	7.62	7.88	.0105	7.97	7.84	.0100
13	8.37	9.03	.0150	8.39	9.00	.0162	9.97	9.83	.0161
14	8.35	8.92	.0200	8.29	8.75	.0201	9.92	9.75	.0206
15	8.30	8.88	.0252	8.22	8.78	.0260	9.90	9.85	.0256
16	8.30	8.83	.0302	8.18	8.76	.0310	9.87	9.74	.0306
17	8.23	8.75	.0352	8.17	8.70	.0361	9.80	9.66	.0357
18	8.28	8.73	.0402	8.00	8.59	.0412	9.81	9.67	.0399
19	8.19	8.62	.0456	7.85	8.50	.0464	9.77	9.61	.0449
20	8.10	8.54	.0509	7.83	8.43	.0512	9.76	9.63	.0502

Step	Specimen No. 124 $t_o = .2512$ dH$_A$	dH$_B$	dt	Specimen No. 125 $t_o = .2512$ dH$_A$	dH$_B$	dt	Specimen No. 126 $t_o = .2512$ dH$_A$	dH$_B$	dt
1	0	0	0	0	0	0	0	0	0
2	.08	.06	.0003	1.49	1.47	.0020	1.48	1.45	.0020
3	.21	.21	.0003	2.57	2.57	.0033	2.61	2.46	.0033
4	-.07	.32	.0005	3.49	3.46	.0048	3.82	3.73	.0048
5	.51	.46	.0008	8.60	8.60	.0108	8.87	8.69	.0110
6	.52	.57	.0010	10.58	10.57	.0156	10.42	10.17	.0161
7	1.13	1.17	.0018	10.69	10.70	.0209	10.46	10.18	.0216
8	1.92	1.82	.0028	10.64	10.66	.0261	10.41	10.15	.0269
9	2.49	2.41	.0035	10.59	10.59	.0317	10.39	10.12	.0306
10	3.53	3.41	.0048	10.55	10.56	.0302	10.31	10.05	.0364
11	4.39	4.35	.0058	10.48	10.50	.0422	10.36	10.06	.0420
12	8.29	8.22	.0111	10.38	10.48	.0475	10.32	9.99	.0470
13	9.55	9.56	.0168	10.35	10.43	.0530	10.25	9.91	.0515
14	9.52	9.43	.0219						
15	9.53	9.44	.0288						
16	9.52	9.43	.0322						
17	9.50	9.41	.0377						
18	9.46	9.41	.0420						
19	9.40	9.33	.0467						
20	9.45	9.39	.0520						

RESIDUAL STRESS DATA

	Specimen No. 127 $t_o = .2507$			Specimen No. 128 $t_o = .2507$			Specimen No. 129 $t_o = .2509$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	1.16	1.06	.0015	.99	1.16	.0020	1.59	1.51	.0023
3	1.86	1.78	.0028	.96	1.18	.0020	3.11	3.09	.0043
4	3.14	2.96	.0043	1.86	2.19	.0033	3.11	3.09	.0043
5	6.63	6.56	.0100	5.67	6.11	.0090	6.83	6.84	.0095
6	7.30	7.08	.0151	6.68	7.04	.0138	7.83	7.87	.0143
7	7.85	7.09	.0198	6.71	7.13	.0188	7.85	7.87	.0193
8	7.25	7.08	.0248	6.64	7.01	.0241	7.72	7.78	.0243
9	7.22	7.04	.0316	6.59	6.93	.0281	7.67	7.71	.0291
10	7.19	7.02	.0349	6.53	6.81	.0346	7.31	7.37	.0339
11	7.18	6.99	.0397	6.53	6.81	.0396	7.25	7.32	.0389
12	7.18	6.98	.0449	6.53	6.84	.0444	7.19	7.29	.0442
13	7.11	6.86	.0502	6.42	6.75	.0486	7.13	7.21	.0492

	Specimen No. 130 $t_o = .2504$			Specimen No. 131 $t_o = .2511$			Specimen No. 132 $t_o = .2512$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	1.60	1.62	.0023	1.64	1.57	.0025	1.48	1.48	.0023
3	3.18	8.17	.0045	3.24	3.18	.0045	2.99	3.06	.0043
4	4.04	4.06	.0055	3.76	4.17	.0058	3.92	3.97	.0055
5	7.14	7.12	.0103	8.23	8.21	.0110	7.66	7.72	.0103
6	7.85	7.84	.0153	9.15	9.24	.0158	9.06	9.16	.0157
7	7.86	7.88	.0203	9.07	9.16	.0216	9.01	9.19	.0210
8	7.77	7.80	.0248	8.92	9.02	.0266	9.01	9.15	.0256
9	7.66	7.77	.0293	8.80	8.92	.0319	8.96	9.08	.0309
10	7.69	7.89	.0341	8.84	8.94	.0372	9.01	9.01	.0357
11	7.67	7.88	.0391	8.73	8.77	.0422	8.90	9.08	.0402
12	7.68	7.83	.0443	8.63	8.67	.0475	8.86	9.07	.0450
13	7.57	7.80	.0496	8.39	8.54	.0522	8.79	9.00	.0500

RESIDUAL STRESS DATA

	Specimen No. 133 $t_o = .2508$			Specimen No. 134 $t_o = .2508$			Specimen No. 135 $t_o = .2511$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	1.17	1.13	.0018	1.06	1.17	.0018	1.25	1.28	.0018
3	2.19	2.24	.0033	2.02	2.17	.0083	2.35	2.45	.0033
4	2.86	2.82	.0040	2.77	2.87	.0043	3.02	3.14	.0040
5	7.08	7.00	.0095	6.80	7.04	.0095	7.00	7.58	.0095
6	8.93	8.65	.0148	8.51	8.91	.0145	8.70	9.31	.0143
7	9.01	8.66	.0201	8.62	9.07	.0193	8.71	9.42	.0196
8	8.90	8.54	.0253	8.56	8.99	.0246	8.59	9.32	.0251
9	8.81	8.43	.0286	8.50	8.90	.0298	8.48	9.24	.0301
10	8.69	8.31	.0356	8.40	8.79	.0351	8.36	9.10	.0345
11	8.62	8.19	.0406	8.35	8.76	.0401	8.24	9.07	.0402
12	8.56	8.04	.0464	8.30	8.70	.0464	8.09	8.98	.0454
13	8.42	7.89	.0517	8.22	8.63	.0501	7.94	8.90	.0507

	Specimen No. 136 $t_o = .2507$			Specimen No. 137 $t_o = .2509$			Specimen No. 138 $t_o = .2503$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	1.47	1.48	.0020	1.79	1.73	.0023	1.54	1.67	.0020
3	2.45	2.48	.0035	2.87	2.81	.0038	2.69	2.80	.0035
4	3.36	3.33	.0045	3.83	3.77	.0050	3.43	3.57	.0045
5	7.68	7.64	.0098	8.01	7.85	.0098	7.92	8.06	.0098
6	9.68	9.91	.0155	11.40	11.27	.0151	10.96	11.02	.0143
7	9.75	10.02	.0208	11.96	11.98	.0198	11.97	11.95	.0193
8	9.70	10.03	.0258	11.80	11.88	.0248	11.93	11.93	.0238
9	9.72	10.00	.0311	11.67	11.76	.0299	11.86	11.77	.0285
10	9.72	9.99	.0361	11.55	11.67	.0354	11.79	11.69	.0343
11	9.67	9.96	.0416	11.40	11.55	.0409	11.64	11.49	.0403
12	9.69	9.97	.0471	11.23	11.44	.0457	11.60	11.42	.0443
13	9.69	9.95	.0519	11.13	11.28	.0512	11.44	11.31	.0503

RESIDUAL STRESS DATA

Step	Specimen No. 139 $t_o = .2512$ dH_A	dH_B	dt	Specimen No. 140 $t_o = .2501$ dH_A	dH_B	dt	Specimen No. 141 $t_o = .2510$ dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	1.29	1.41	.0020	1.45	1.48	.0020	1.70	1.65	.0025
3	2.34	2.38	.0035	2.47	2.58	.0038	3.10	2.91	.0038
4	3.26	3.29	.0048	3.29	3.43	.0048	3.85	3.65	.0048
5	7.06	7.01	.0098	6.65	6.93	.0095	8.28	8.09	.0100
6	9.72	9.59	.0148	9.20	9.48	.0140	11.25	11.41	.0156
7	10.34	10.12	.0201	10.40	10.34	.0188	12.00	12.33	.0206
8	10.36	10.14	.0251	10.38	10.32	.0230	11.95	12.20	.0271
9	10.35	10.09	.0304	10.29	10.23	.0280	11.90	12.18	.0321
10	10.30	10.40	.0354	10.20	10.14	.0335	11.83	12.09	.0372
11	10.30	10.28	.0407	10.06	10.00	.0395	11.80	12.04	.0422
12	10.30	10.27	.0460	9.94	9.88	.0443	11.70	11.91	.0497
13	10.47	10.29	.0507	9.88	9.82	.0498	11.69	11.82	.0522

Step	Specimen No. 142 $t_o = .2505$ dH_A	dH_B	dt	Specimen No. 143 $t_o = .2505$ dH_A	dH_B	dt	Specimen No. 144 $t_o = .2498$ dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	1.69	1.72	.0030	1.72	1.74	.0025	1.96	1.91	.0025
3	3.15	3.20	.0043	3.18	3.08	.0040	3.43	3.34	.0042
4	4.05	4.21	.0055	3.83	3.77	.0050	4.33	4.28	.0052
5	8.63	8.83	.0110	8.64	8.49	.0103	9.12	8.79	.0105
6	11.31	11.50	.0160	12.25	11.97	.0152	12.60	12.31	.0152
7	11.94	12.11	.0225	14.09	14.00	.0200	14.32	14.35	.0212
8	11.80	11.97	.0278	13.98	13.92	.0266	14.21	14.31	.0260
9	11.70	11.86	.0328	13.87	13.72	.0313	14.17	14.28	.0307
10	11.47	11.70	.0381	13.72	13.79	.0366	14.10	14.19	.0355
11	11.37	11.60	.0436	13.60	13.69	.0421	14.07	14.18	.0407
12	11.19	11.42	.0491	13.48	13.56	.0468	13.99	14.17	.0455
13	11.03	11.31	.0539	13.34	13.44	.0519	13.85	14.08	.0505

RESIDUAL STRESS DATA

Step	Specimen No. 145 (t_o = .2509) dH_A	dH_B	dt	Specimen No. 146 (t_o = .2506) dH_A	dH_B	dt	Specimen No. 147 (t_o = .2507) dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.16	.12	.0003	.11	.23	.0003	.12	.12	.0003
3	.33	.26	.0005	.22	.32	.0010	.32	.29	.0005
4	.50	.42	.0010	.40	.45	.0010	.55	.46	.0008
5	.99	.91	.0018	.92	1.08	.0018	1.09	.96	.0016
6	1.59	1.48	.0025	1.40	1.54	.0025	1.72	1.57	.0028
7	1.98	1.81	.0033	1.83	2.03	.0033	2.21	2.06	.0035
8	2.78	2.50	.0045	2.54	2.75	.0045	3.27	3.10	.0048
9	3.31	3.10	.0053	2.59	2.79	.0045	4.10	3.82	.0056
10	5.99	5.94	.0100	5.62	5.91	.0095	7.22	6.87	.0113
11	6.95	6.95	.0161	7.00	7.13	.0155	7.70	7.54	.0165
12	6.96	6.90	.0218	7.01	7.08	.0208	7.60	7.48	.0213
13	6.89	6.82	.0268	6.94	7.53	.0266	7.51	7.36	.0268
14	6.73	6.76	.0319	6.90	7.36	.0311	7.43	7.45	.0323
15	6.69	6.60	.0366	6.85	7.31	.0363	7.39	7.41	.0374
16	6.71	6.66	.0422	6.81	7.33	.0419	7.33	7.36	.0431
17	6.72	6.58	.0482	6.76	7.30	.0479	7.23	7.27	.0499

Step	Specimen No. 148 (t_o = .2513) dH_A	dH_B	dt	Specimen No. 149 (t_o = .2516) dH_A	dH_B	dt	Specimen No. 150 (t_o = .2494) dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.14	.11	.0003	.14	.13	.0003	.10	.10	.0003
3	.33	.30	.0008	.34	.34	.0005	.33	.34	.0005
4	.48	.41	.0010	.55	.52	.0008	.61	.57	.0010
5	1.02	1.01	.0020	5.36	5.14	.0068	4.79	4.77	.0062
6	1.52	1.56	.0028	9.07	8.93	.0125	8.81	8.73	.0112
7	2.03	2.09	.0035	10.53	10.33	.0169	10.50	10.35	.0160
8	3.06	3.00	.0048	10.62	10.39	.0052	10.61	10.38	.0232
9	3.73	3.77	.0058	10.51	10.29	.0307	10.49	10.25	.0287
10	7.03	7.03	.0116	10.43	10.21	.0362	10.37	10.16	.0339
11	7.73	7.73	.0173	10.36	10.16	.0408	10.28	10.06	.0394
12	7.67	7.67	.0223	10.33	10.14	.0473	10.23	10.01	.0444
13	7.61	7.61	.0269	10.26	10.06	.0516	10.11	9.94	.0494
14	7.55	7.55	.0324	10.23	9.99	.0564	10.00	9.83	.0546
15	7.51	7.51	.0377						
16	7.49	7.49	.0444						
17	7.40	7.38	.0497						

RESIDUAL STRESS DATA

Step	Specimen No. 151 $t_o = .2490$ dH$_A$	dH$_B$	dt	Specimen No. 152 $t_o = .2493$ dH$_A$	dH$_B$	dt	Specimen No. 153 $t_o = .2497$ dH$_A$	dH$_B$	dt
1	0	0	0	0	0	0	0	0	0
2	.10	.07	.0003	.04	.14	.0003	.14	.12	.0003
3	.36	.31	.0005	.28	.37	.0005	.35	.31	.0005
4	.57	.50	.0010	.43	.54	.0007	.54	.54	.0007
5	4.78	4.58	.0067	4.47	4.77	.0067	1.05	.94	.0015
6	8.35	8.03	.0127	8.00	8.57	.0127	1.57	1.44	.0022
7	9.71	9.27	.0177	9.05	9.80	.0179	2.45	2.31	.0032
8	9.88	9.42	.0254	9.24	9.91	.0257	4.21	4.17	.0055
9	9.73	9.27	.0309	9.16	9.90	.0312	5.25	5.41	.0070
10	9.63	9.18	.0359	9.16	9.87	.0369	9.62	9.42	.0125
11	9.54	9.14	.0413	9.21	9.89	.0419	11.32	11.01	.0172
12	9.50	9.07	.0458	9.20	9.88	.0471	11.54	11.23	.0257
13	9.41	8.96	.0513	9.20	9.86	.0521	11.49	10.17	.0307
14	9.27	8.88	.0570	9.21	9.82	.0558	11.38	11.08	.0352
15							11.33	10.98	.0407
16							11.33	10.99	.0459
17							11.24	11.90	.0512

Step	Specimen No. 154 $t_o = .2497$ dH$_A$	dH$_B$	dt	Specimen No. 155 $t_o = .2490$ dH$_A$	dH$_B$	dt	Specimen No. 156 $t_o = .2500$ dH$_A$	dH$_B$	dt
1	0	0	0	0	0	0	0	0	0
2	.15	.07	.0003	.14	.20	.0003	.14	.15	.0003
3	.40	.30	.0005	.31	.31	.0005	.38	.34	.0005
4	.48	.43	.0007	.49	.51	.0007	.59	.51	.0008
5	1.00	.92	.0015	1.05	1.10	.0015	1.02	.90	.0015
6	1.45	1.36	.0022	1.43	1.50	.0022	1.53	1.43	.0023
7	2.23	2.13	.0030	2.19	2.33	.0030	2.16	2.25	.0033
8	4.16	4.07	.0057	4.33	4.45	.0057	4.11	4.26	.0055
9	5.47	5.44	.0072	5.57	5.63	.0072	5.35	5.56	.0073
10	9.48	9.42	.0127	9.95	10.14	.0120	9.67	10.05	.0123
11	11.21	11.19	.0177	13.23	13.42	.0172	12.94	13.27	.0175
12	11.42	11.39	.0297	14.28	14.41	.0266	13.74	13.98	.0298
13	11.33	11.30	.0322	14.23	14.31	.0309	13.67	13.94	.0323
14	11.25	11.22	.0375	14.18	14.26	.0356	13.65	13.90	.0373
15	11.15	11.10	.0429	14.12	14.24	.0408	13.64	13.88	.0435
16	11.12	11.07	.0487	14.12	14.29	.0466	13.66	13.89	.0485
17	11.04	10.99	.0518	14.08	14.23	.0518	13.65	13.86	.0533

RESIDUAL STRESS DATA

Step	Specimen No. 157 $t_o = .2494$ dH$_A$	dH$_B$	dt	Specimen No. 158 $t_o = .2495$ dH$_A$	dH$_B$	dt	Specimen No. 159 $t_o = .2496$ dH$_A$	dH$_B$	dt
1	0	0	0	0	0	0	0	0	0
2	1.33	1.48	.0020	1.34	1.20	.0018	1.39	1.35	.0017
3	2.23	2.46	.0030	2.33	2.21	.0033	2.56	2.48	.0032
4	3.15	3.39	.0042	3.24	3.12	.0043	3.29	3.15	.0042
5	7.44	7.68	.0097	7.14	7.11	.0093	7.89	7.58	.0095
6	10.63	10.83	.0145	10.76	10.55	.0145	12.11	11.62	.0152
7	12.34	12.52	.0192	12.46	12.08	.0198	13.80	13.24	.0205
8	12.69	12.83	.0249	12.58	12.16	.0258	13.89	13.37	.0265
9	12.67	12.82	.0302	12.51	12.07	.0313	13.86	13.35	.0314
10	12.76	12.94	.0354	12.50	11.93	.0360	13.86	13.39	.0362
11	12.84	12.91	.0409	12.41	11.98	.0413	13.83	13.36	.0417
12	12.83	12.89	.0461	12.34	11.87	.0460	13.79	13.36	.0464
13	12.77	12.84	.0511	12.22	11.76	.0510	13.73	13.32	.0509

Step	Specimen No. 160 $t_o = .2500$ dH$_A$	dH$_B$	dt	Specimen No. 161 $t_o = .2497$ dH$_A$	dH$_B$	dt	Specimen No. 162 $t_o = .2496$ dH$_A$	dH$_B$	dt
1	0	0	0	0	0	0	0	0	0
2	1.11	1.03	.0018	1.47	1.52	.0021	1.20	1.23	.0020
3	2.20	2.12	.0030	2.43	2.53	.0035	2.26	2.26	.0032
4	3.03	2.89	.0043	3.35	3.42	.0045	3.14	3.12	.0044
5	7.77	7.56	.0098	8.45	8.48	.0103	7.63	7.43	.0092
6	11.49	11.35	.0148	13.16	13.15	.0158	12.22	12.27	.0142
7	13.43	13.23	.0195	15.57	15.36	.0210	15.81	15.71	.0200
8	13.83	13.59	.0258	15.86	15.60	.0260	16.67	16.82	.0250
9	13.78	13.54	.0313	15.87	15.60	.0310	16.74	16.90	.0302
10	13.86	13.55	.0355	15.80	15.55	.0360	16.67	16.83	.0357
11	13.82	13.53	.0413	15.87	15.61	.0408	16.76	16.93	.0412
12	13.76	13.46	.0463	15.81	15.57	.0465	16.70	16.70	.0472
13	13.72	13.41	.0513	15.75	15.48	.0520	16.63	16.74	.0527

RESIDUAL STRESS DATA

Step	Specimen No. 163 $t_o = .2484$ dH$_A$	dH$_B$	dt	Specimen No. 164 $t_o = .2495$ dH$_A$	dH$_B$	dt	Specimen No. 165 $t_o = .2496$ dH$_A$	dH$_B$	dt
1	0	0	0	0	0	0	0	0	0
2	1.70	1.49	.0020	1.72	1.70	.0020	1.49	1.48	.0020
3	2.64	2.39	.0032	2.50	2.62	.0032	2.69	2.67	.0035
4	3.57	3.29	.0042	3.34	3.29	.0042	3.87	3.90	.0047
5	7.87	7.29	.0092	7.94	7.70	.0097	9.69	9.64	.0110
6	11.13	10.46	.0139	11.33	10.79	.0147	14.09	13.47	.0165
7	13.12	12.38	.0174	12.91	12.23	.0200	15.60	15.23	.0225
8	13.48	12.59	.0243	13.01	12.32	.0252	15.67	15.26	.0282
9	13.50	12.63	.0293	12.99	12.28	.0302	15.57	15.16	.0339
10	13.55	12.80	.0348	12.90	12.18	.0357	15.51	15.12	.0394
11	13.69	13.08	.0397	12.96	12.25	.0404	15.39	15.04	.0447
12	13.66	13.08	.0457	12.91	12.19	.0459	15.37	14.97	.0504
13	13.56	13.00	.0509	12.80	12.04	.0511			

Step	Specimen No. 166 $t_o = .2509$ dH$_A$	dH$_B$	dt	Specimen No. 167 $t_o = .2509$ dH$_A$	dH$_B$	dt	Specimen No. 168 $t_o = .2504$ dH$_A$	dH$_B$	dt
1	0	0	0	0	0	0	0	0	0
2	1.45	1.47	.0020	1.49	1.56	.0020	1.61	1.56	.0023
3	2.51	2.48	.0033	2.58	2.59	.0035	2.85	2.70	.0038
4	3.82	3.78	.0045	3.59	3.65	.0048	3.71	3.53	.0048
5	9.07	9.17	.0105	8.98	8.96	.0105	9.62	9.42	.0110
6	12.73	13.05	.0165	13.27	13.30	.0156	14.11	13.57	.0163
7	14.30	14.79	.0226	16.73	17.11	.0206	17.05	16.53	.0228
8	14.31	14.81	.0279	17.17	17.56	.0273	17.23	16.77	.0280
9	14.22	14.71	.0331	17.07	17.47	.0331	17.18	16.62	.0336
10	14.19	14.67	.0381	17.01	17.41	.0381	17.10	16.56	.0396
11	14.12	14.58	.0434	16.96	17.33	.0432	17.01	16.48	.0446
12	14.08	14.53	.0487	16.95	17.30	.0484	16.97	16.38	.0498

RESIDUAL STRESS DATA

Step	Specimen No. 169 $t_o = .2488$ dH$_A$	dH$_B$	dt	Specimen No. 170 $t_o = .2507$ dH$_A$	dH$_B$	dt	Specimen No. 171 $t_o = .2507$ dH$_A$	dH$_B$	dt
1	0	0	0	0	0	0	0	0	0
2	1.15	1.18	.0020	1.22	1.46	.0023	1.49	1.44	.0020
3	2.87	3.15	.0045	3.20	3.71	.0048	3.28	3.28	.0043
4	3.91	4.26	.0057	4.46	5.13	.0065	4.46	4.58	.0058
5	8.66	9.08	.0112	8.65	9.83	.0110	9.10	9.26	.0105
6	12.21	12.53	.0164	12.31	14.00	.0160	13.58	13.80	.0153
7	14.32	14.66	.0221	14.85	17.01	.0213	17.78	17.89	.02[illegible]1
8	14.81	15.13	.0266	15.71	17.90	.0261	19.49	19.57	.0256
9	14.83	15.16	.0311	15.80	17.99	.0311	19.87	19.96	.0303
10	14.85	15.15	.0363	15.80	17.99	.0361	19.94	20.00	.0354
11	14.82	15.11	.0415	15.74	17.91	.0409	19.88	19.91	.0404
12	14.75	14.99	.0468	15.72	17.57	.0461	19.78	19.80	.0451
13	14.75	14.99	.0520	15.72	17.69	.0509	19.77	19.80	.0499

Step	Specimen No. 172 $t_o = .2505$ dH$_A$	dH$_B$	dt	Specimen No. 173 $t_o = .2506$ dH$_A$	dH$_B$	dt	Specimen No. 174 $t_o = .2505$ dH$_A$	dH$_B$	dt
1	0	0	0	0	0	0	0	0	0
2	1.58	1.55	.0020	.41	.41	.0008	.59	.54	.0008
3	3.58	3.58	.0045	.92	.82	.0013	1.01	.97	.0013
4	5.18	5.15	.0063	1.38	1.26	.0018	1.50	1.44	.0021
5	10.28	10.20	.0115	2.52	2.41	.0033	2.71	2.71	.0033
6	14.06	14.61	.0165	3.30	3.13	.0043	3.26	3.26	.0044
7	18.69	17.96	.0220	4.20	4.01	.0054	4.16	4.19	.0054
8	19.99	18.99	.0266	5.62	5.43	.0072	5.50	5.60	.0072
9	20.17	19.11	.0301	6.52	6.33	.0082	6.27	6.39	.0082
10	20.18	19.11	.0373	7.38	7.22	.0095	7.29	7.46	.0095
11	20.07	19.01	.0428	9.14	9.04	.0115	9.40	9.59	.0118
12	19.96	18.90	.0473	10.45	10.33	.0128	10.96	11.22	.0136
13	19.88	18.87	.0524	14.29	14.37	.0174	14.76	14.93	.0182
14				17.24	17.63	.0222	17.53	17.61	.0231
15				18.69	19.47	.0266	18.59	18.43	.0277
16				19.14	20.13	.0322	18.62	18.58	.0328
17				19.30	20.15	.0373	18.77	18.60	.0382
18				19.30	20.14	.0427	18.81	18.63	.0433
19				19.34	20.16	.0483	18.82	18.63	.0485

RESIDUAL STRESS DATA

	Specimen No. 175 t_o = .2508			Specimen No. 176 t_o = .2509			Specimen No. 177 t_o = .2503		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	2.57	2.52	.0029	2.25	2.52	.0026	.70	.68	.0010
3	3.90	3.84	.0045	3.56	3.87	.0044	2.60	2.48	.0030
4	4.72	4.62	.0055	4.27	4.63	.0054	3.66	3.48	.0043
5	8.56	8.54	.0098	8.32	8.94	.0105	8.65	8.00	.0095
6	13.77	13.77	.0151	12.55	13.32	.0146	14.45	13.69	.0148
7	17.00	17.12	.0193	16.63	17.72	.0197	19.16	18.12	.0198
8	19.60	19.73	.0248	18.86	20.12	.0251	22.40	21.13	.0248
9	20.55	20.59	.0298	19.47	20.47	.0296	23.99	22.52	.0300
10	20.82	20.80	.0341	19.80	20.59	.0346	24.28	22.97	.0353
11	20.75	20.72	.0386	19.46	20.86	.0396	24.19	22.69	.0403
12	20.77	20.71	.0441	19.42	20.77	.0447	24.11	22.68	.0450
13	20.68	20.57	.0489	19.30	20.73	.0497	24.08	22.62	.0503
14							24.03	22.50	.0551

	Specimen No. 178 t_o = .2508			Specimen No. 179 t_o = .2500			Specimen No. 180 t_o = .2508		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.73	.63	.0010	.95	.99	.0013	.89	.96	.0013
3	2.51	2.48	.0030	2.65	2.74	.0033	2.80	2.75	.0033
4	3.81	3.49	.0043	3.84	3.82	.0045	3.94	3.86	.0045
5	9.00	8.56	.0099	8.40	8.31	.0098	8.49	8.39	.0098
6	14.66	13.96	.0153	14.24	14.34	.0155	14.28	14.03	.0153
7	18.29	17.13	.0193	18.95	19.18	.0200	18.39	18.38	.0193
8	22.11	21.17	.0243	22.56	23.22	.0245	21.88	22.30	.0238
9	22.42	22.84	.0298	25.12	25.90	.0300	24.69	25.14	.0293
10	22.56	22.98	.0359	25.83	26.74	.0355	25.42	26.05	.0349
11	22.60	23.11	.0396	25.81	26.71	.0405	25.44	26.07	.0401
12	22.57	23.07	.0416	25.73	26.41	.0453	25.43	25.91	.0449
13	22.51	22.90	.0492	25.70	26.52	.0498	25.41	25.89	.0494
14	22.49	22.92	.0539	25.64	26.42	.0548	25.37	25.82	.0547

RESIDUAL STRESS DATA

Step	Specimen No. 181, t_o = .2511 dH$_A$	dH$_B$	dt	Specimen No. 182, t_o = .2517 dH$_A$	dH$_B$	dt	Specimen No. 183, t_o = .2509 dH$_A$	dH$_B$	dt
1	0	0	0	0	0	0	0	0	0
2	1.21	1.31	.0018	1.26	1.23	.0018	1.45	1.42	.0018
3	2.69	2.69	.0035	2.40	2.49	.0038	2.69	2.69	.0033
4	3.05	3.09	.0045	2.68	2.84	.0048	2.70	2.69	.0033
5	3.35	3.49	.0098	2.71	2.96	.0096	3.65	3.67	.0083
6	3.22	3.33	.0153	2.46	2.70	.0156	3.41	3.45	.0143
7	3.03	3.18	.0198	2.15	2.44	.0216	3.10	3.22	.0196
8	2.79	2.94	.0251	1.95	2.19	.0264	2.83	3.00	.0241
9	2.55	2.76	.0309	1.61	1.91	.0330	2.59	2.80	.0281
10	2.36	2.58	.0364	1.32	1.68	.0385	2.33	2.63	.0354
11	2.05	2.32	.0417	.99	1.39	.0438	2.05	2.42	.0414
12	1.78	1.95	.0482	.58	.95	.0511	1.77	2.20	.0474
13	1.52	1.73	.0545	.28	.75	.0576	1.52	2.12	.0542

Step	Specimen No. 184, t_o = .2503 dH$_A$	dH$_B$	dt	Specimen No. 185, t_o = .2496 dH$_A$	dH$_B$	dt	Specimen No. 186, t_o = .2504 dH$_A$	dH$_B$	dt
1	0	0	0	0	0	0	0	0	0
2	1.69	1.45	.0018	1.48	1.42	.0020	1.51	1.61	.0020
3	2.78	2.66	.0033	2.88	2.93	.0035	2.95	2.98	.0038
4	3.45	3.33	.0045	3.88	3.94	.0055	3.78	3.99	.0055
5	3.88	3.85	.0098	4.36	4.37	.0107	4.21	4.33	.0105
6	3.78	3.72	.0153	4.09	4.16	.0165	4.02	4.06	.0163
7	3.56	3.56	.0203	3.78	3.80	.0217	3.79	3.78	.0218
8	3.32	3.36	.0255	3.50	3.61	.0280	3.58	3.60	.0273
9	3.04	3.15	.0315	3.22	3.37	.0339	3.39	3.37	.0333
10	2.77	2.92	.0373	2.91	3.31	.0399	3.12	3.13	.0391
11	2.45	2.67	.0433	2.67	3.09	.0462	2.81	2.94	.0453
12	2.14	2.47	.0501	2.32	2.79	.0522	2.70	2.74	.0513
13	1.95	2.29	.0558						

RESIDUAL STRESS DATA

	Specimen No. 187 $t_o = .2501$			Specimen No. 188 $t_o = .2516$			Specimen No. 189 $t_o = .2503$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	1.34	1.25	.0018	1.35	1.24	.0018	1.38	1.48	.0018
3	2.68	2.50	.0035	2.35	2.34	.0045	2.75	2.94	.0035
4	3.53	3.32	.0053	3.64	3.34	.0070	3.46	3.71	.0048
5	4.08	3.83	.0108	4.32	3.95	.0103	4.19	4.46	.0113
6	3.91	3.62	.0170	4.14	3.74	.0166	4.33	4.57	.0170
7	3.68	3.41	.0225	3.91	3.49	.0226	4.23	4.47	.0220
8	3.49	3.18	.0285	3.71	3.28	.0289	4.08	4.39	.0283
9	3.29	2.99	.0340	3.51	3.03	.0350	4.01	4.28	.0338
10	3.05	2.72	.0403	3.27	3.00	.0410	3.93	4.17	.0393
11	2.84	2.51	.0465	3.04	2.63	.0473	3.88	3.99	.0451
12	2.67	2.40	.0525	2.88	2.51	.0531	3.73	3.88	.0503

	Specimen No. 190 $t_o = .2515$			Specimen No. 191 $t_o = .2506$			Specimen No. 192 $t_o = .2508$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	1.41	1.41	.0018	1.23	1.28	.0018	1.42	1.39	.0020
3	2.77	2.70	.0035	2.26	2.36	.0033	2.82	2.81	.0035
4	3.68	3.51	.0045	3.04	3.17	.0038	3.80	3.74	.0048
5	4.55	4.21	.0106	4.78	4.99	.0105	5.22	5.06	.0108
6	4.59	4.22	.0163	4.88	5.09	.0163	5.09	4.92	.0168
7	4.45	4.10	.0219	4.72	4.99	.0220	4.80	4.68	.0223
8	4.32	3.98	.0282	4.57	4.90	.0278	4.49	4.42	.0278
9	4.26	3.89	.0332	4.48	4.82	.0335	4.30	4.21	.0334
10	4.14	3.76	.0382	4.35	4.73	.0391	4.04	3.90	.0386
11	3.98	3.68	.0440	4.23	4.61	.0456	3.82	3.60	.0441
12	3.94	3.58	.0483	4.15	4.57	.0501	3.62	3.50	.0492

RESIDUAL STRESS DATA

Step	Specimen No. 193 t_o = .2516			Specimen No. 194 t_o = .2510			Specimen No. 195 t_o = .2518		
	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	1.24	1.10	.0015	1.55	1.63	.0023	1.55	1.57	.0020
3	2.96	2.62	.0038	3.03	3.23	.0040	3.41	3.44	.0043
4	4.09	3.73	.0058	3.99	4.26	.0060	4.58	4.67	.0060
5	4.52	4.18	.0113	4.38	4.78	.0115	5.22	5.38	.0116
6	4.41	3.99	.0166	4.24	4.66	.0171	5.13	5.33	.0171
7	4.12	3.71	.0224	4.00	4.43	.0233	4.94	5.16	.0229
8	3.89	3.48	.0279	3.74	4.28	.0291	4.81	4.99	.0287
9	3.65	3.16	.0335	3.65	4.13	.0344	4.74	4.87	.0342
10	3.34	2.85	.0392	3.45	3.96	.0409	4.54	4.70	.0400
11	3.15	2.59	.0445	3.31	3.84	.0449	4.33	4.56	.0451
12	2.81	2.27	.0508	3.12	3.71	.0507	4.43	4.37	.0511

Step	Specimen No. 196 t_o = .2515			Specimen No. 197 t_o = .2509			Specimen No. 198 t_o = .2507		
	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	1.51	1.56	.0020	1.51	1.47	.0021	1.60	1.64	.0022
3	3.16	3.18	.0040	2.89	2.88	.0037	3.02	3.10	.0038
4	4.27	4.19	.0058	2.99	2.89	.0037	3.06	3.12	.0038
5	4.91	4.69	.0113	5.81	5.64	.0098	5.74	6.12	.0093
6	4.80	4.57	.0169	5.86	5.66	.0148	5.89	6.26	.0143
7	4.49	4.32	.0226	5.69	5.38	.0203	5.63	6.04	.0201
8	4.21	4.07	.0284	5.31	5.08	.0258	5.40	5.81	.0251
9	3.91	3.73	.0345	4.98	4.77	.0316	5.02	5.54	.0308
10	3.53	3.52	.0407	4.78	4.58	.0366	4.90	5.41	.0358
11	3.26	3.34	.0458	4.59	4.37	.0416	4.68	5.18	.0409
12	2.94	3.06	.0523	4.34	4.10	.0472	4.46	5.01	.0466
13				4.01	3.78	.0529	3.89	4.77	.0511

RESIDUAL STRESS DATA

	Specimen No. 199 $t_o = .2507$			Specimen No. 200 $t_o = .2508$			Specimen No. 201 $t_o = .2506$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	1.45	1.47	.0023	1.50	1.39	.0023	1.50	1.54	.0020
3	2.60	2.68	.0038	2.72	2.55	.0038	3.13	3.19	.0040
4	3.09	3.13	.0045	3.09	2.95	.0043	3.82	3.80	.0048
5	4.28	4.24	.0103	4.27	4.00	.0098	5.35	5.30	.0103
6	4.28	4.28	.0156	4.32	4.06	.0145	5.22	5.12	.0160
7	3.99	4.00	.0216	4.14	3.86	.0203	4.98	4.89	.0210
8	3.72	3.78	.0271	4.01	3.68	.0253	4.82	4.75	.0268
9	3.42	3.49	.0323	3.79	3.39	.0311	4.43	4.59	.0318
10	3.20	3.28	.0379	3.71	3.28	.0361	4.44	4.39	.0376
11	2.97	3.07	.0431	3.58	3.10	.0414	4.32	4.21	.0434
12	2.70	2.83	.0486	3.45	2.97	.0461	4.19	4.05	.0491
13	2.37	2.52	.0549	3.28	2.70	.0522			

	Specimen No. 202 $t_o = .2509$			Specimen No. 203 $t_o = .2509$			Specimen No. 204 $t_o = .2518$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	1.51	1.45	.0020	1.79	1.73	.0022	1.21	1.23	.0018
3	3.02	3.00	.0040	3.28	3.22	.0040	2.73	2.78	.0035
4	3.80	3.82	.0050	4.21	4.19	.0050	3.72	3.84	.0045
5	4.92	4.99	.0095	5.78	5.83	.0105	5.78	5.71	.0093
6	4.74	4.75	.0158	5.54	5.64	.0156	5.80	5.73	.0154
7	4.51	4.53	.0206	5.31	5.43	.0221	5.69	5.55	.0216
8	4.35	4.31	.0263	5.09	5.23	.0281	5.61	5.53	.0272
9	4.20	4.10	.0311	4.89	4.91	.0336	5.57	5.46	.0325
10	3.94	3.76	.0371	4.60	4.72	.0401	5.40	5.27	.0382
11	3.78	3.63	.0422	4.36	4.53	.0459	5.31	5.19	.0436
12	3.63	3.43	.0482	4.14	4.34	.0517	5.28	5.16	.0486

RESIDUAL STRESS DATA

Step	Specimen No. 205 $t_o = .2515$ dH_A	dH_B	dt	Specimen No. 206 $t_o = .2510$ dH_A	dH_B	dt	Specimen No. 207 $t_o = .2506$ dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.16	.15	.0002	.14	.17	.0001	.17	.12	.0002
3	.40	.42	.0008	.44	.48	.0007	.49	.42	.0008
4	.71	.70	.0012	.75	.78	.0012	.76	.67	.0010
5	1.55	1.61	.0023	1.48	1.49	.0022	1.45	1.40	.0020
6	2.20	2.26	.0030	2.30	2.31	.0033	2.41	2.34	.0030
7	3.11	3.17	.0043	3.09	3.15	.0043	3.22	3.21	.0040
8	4.82	4.82	.0073	5.00	5.02	.0073	5.43	5.42	.0070
9	5.28	5.29	.0093	5.60	5.53	.0095	6.28	6.23	.0093
10	5.11	5.27	.0148	5.55	5.37	.0143	6.52	6.42	.0143
11	4.96	5.03	.0201	5.37	5.21	.0208	6.44	6.35	.0193
12	4.77	4.82	.0251	5.19	5.01	.0266	6.35	6.26	.0248
13	4.47	4.59	.0314	5.01	4.81	.0326	6.32	6.21	.0300
14	4.27	4.37	.0370	4.88	4.66	.0371	6.16	6.07	.0360
15	3.97	4.10	.0430	4.78	4.46	.0431	6.04	5.97	.0413
16	3.85	3.99	.0473	4.70	4.31	.0474	5.97	5.90	.0466
17	3.57	3.67	.0533	4.51	4.19	.0527	5.84	5.73	.0526

Step	Specimen No. 208 $t_o = .2507$ dH_A	dH_B	dt	Specimen No. 209 $t_o = .2504$ dH_A	dH_B	dt	Specimen No. 210 $t_o = .2505$ dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.16	.13	.0002	1.59	1.57	.0020	1.51	1.46	.0020
3	.40	.34	.0008	1.60	1.58	.0020	1.51	1.46	.0020
4	.69	.63	.0010	2.28	2.31	.0030	2.64	2.61	.0032
5	1.59	1.54	.0022	6.96	6.98	.0093	7.11	7.11	.0103
6	2.37	2.24	.0030	7.37	7.30	.0145	7.05	7.06	.0163
7	3.43	3.28	.0043	7.12	7.13	.0205	6.83	6.82	.0230
8	5.31	5.30	.0070	6.96	6.98	.0255	6.65	6.61	.0286
9	6.18	6.15	.0093	6.85	6.88	.0303	6.53	6.41	.0351
10	6.28	6.27	.0143	6.64	6.69	.0348	6.32	6.20	.0401
11	5.97	6.00	.0208	6.45	6.50	.0398	6.10	5.97	.0458
12	5.80	5.76	.0261	6.22	6.24	.0461	5.88	5.72	.0526
13	5.65	5.55	.0313						
14	5.37	5.24	.0371						
15	5.15	5.08	.0426						
16	4.88	4.75	.0476						
17	4.67	4.52	.0524						

RESIDUAL STRESS DATA

	Specimen No. 211 $t_o = .2510$			Specimen No. 212 $t_o = .2515$			Specimen No. 213 $t_o = .2517$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.84	.95	.0015	1.12	1.03	.0018	.14	.12	.0002
3	2.04	2.11	.0030	2.61	2.51	.0035	1.07	.99	.0018
4	3.06	3.13	.0040	3.32	3.36	.0043	2.46	2.41	.0035
5	6.95	7.24	.0110	6.99	6.85	.0103	3.61	3.52	.0045
6	6.86	7.22	.0171	7.16	7.07	.0153	7.66	7.56	.0108
7	6.60	6.93	.0241	6.92	6.76	.0221	7.77	7.67	.0171
8	6.39	6.72	.0289	6.69	6.47	.0279	7.42	7.20	.0257
9	6.26	6.57	.0351	6.59	6.27	.0342	7.19	6.91	.0317
10	5.96	6.13	.0412	6.27	5.94	.0392	6.94	6.66	.0370
11	5.75	5.94	.0469	6.03	5.69	.0445	6.67	6.29	.0428
12	5.57	5.74	.0520	5.79	5.42	.0498	6.55	6.06	.0486
13							6.28	5.77	.0539

	Specimen No. 214 $t_o = .2505$			Specimen No. 215 $t_o = .2494$			Specimen No. 216 $t_o = .2515$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.13	.15	.0002	.14	.09	.0002	.14	.31	.0002
3	1.52	1.60	.0021	1.29	1.07	.0017	1.50	1.47	.0020
4	2.98	2.88	.0038	2.57	2.47	.0032	2.89	2.84	.0038
5	4.11	3.93	.0051	3.54	3.56	.0045	4.07	3.96	.0048
6	8.13	8.14	.0103	8.01	8.03	.0100	8.38	8.46	.0101
7	8.25	8.31	.0175	9.02	8.79	.0155	9.40	9.49	.0161
8	8.05	8.08	.0245	8.70	8.48	.0234	9.28	9.37	.0237
9	7.92	7.90	.0308	8.42	8.21	.0299	9.14	9.28	.0289
10	7.77	7.73	.0361	8.11	7.94	.0359	3.99	9.10	.0340
11	7.62	7.56	.0411	8.11	7.69	.0406	8.81	8.90	.0397
12	7.62	7.54	.0461	8.07	7.55	.0464	8.82	8.82	.0440
13	7.47	7.31	.0516	7.68	7.25	.0521	8.59	8.63	.0488

RESIDUAL STRESS DATA

	Specimen No. 217, t_o = .2505			Specimen No. 218, t_o = .2512			Specimen No. 219, t_o = .2486		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.09	.14	.0002	.14	.10	.0002	0	.14	.0002
3	.05	.24	.0005	.21	.18	.0002	.06	.21	.0005
4	.25	.33	.0005	.29	.24	.0005	.06	.31	.0005
5	.37	.51	.0008	.38	.33	.0008	.34	.51	.0007
6	.96	1.04	.0018	.79	.78	.0015	.81	.93	.0017
7	1.55	1.57	.0030	1.40	1.41	.0028	1.66	1.79	.0030
8	2.40	2.05	.0035	1.81	1.79	.0033	2.16	2.22	.0037
9	3.25	3.21	.0053	1.80	1.81	.0033	3.22	3.35	.0052
10	4.37	4.33	.0075	3.41	3.38	.0060	4.61	4.60	.0077
11	4.91	5.00	.0130	4.91	4.87	.0118	5.53	5.59	.0137
12	4.77	4.84	.0180	4.73	4.70	.0176	5.36	5.38	.0191
13	4.63	4.67	.0230	4.51	4.48	.0229	5.16	5.20	.0244
14	4.45	4.45	.0286	4.29	4.25	.0281	4.88	4.97	.0318
15	4.30	4.35	.0351	4.09	4.03	.0359	4.69	4.83	.0380
16	4.17	4.15	.0410	3.88	3.86	.0392	4.46	4.59	.0438
17	4.03	3.94	.0476	3.63	3.69	.0437	4.18	4.31	.0500
18	3.96	3.79	.0531	3.51	3.59	.0490	3.97	4.11	.0547

	Specimen No. 220, t_o = .2484			Specimen No. 221, t_o = .2485			Specimen No. 222, t_o = .2485		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.09	.11	.0002	1.08	.98	.0017	.90	1.06	.0017
3	.13	.09	.0002	1.07	.95	.0017	1.78	1.93	.0030
4	.22	.20	.0005	2.02	1.87	.0030	2.89	2.96	.0042
5	.45	.32	.0007	6.03	5.84	.0077	6.59	6.74	.0094
6	.82	.73	.0015	7.60	7.37	.0132	7.21	7.38	.0152
7	1.42	1.33	.0025	7.50	7.27	.0196	7.06	7.21	.0226
8	1.74	1.71	.0030	7.29	7.06	.0253	6.96	7.08	.0278
9	3.13	3.04	.0047	7.06	6.85	.0308	6.79	6.90	.0338
10	4.92	4.73	.0077	6.79	6.62	.0375	6.67	6.76	.0405
11	5.95	5.74	.0137	6.46	6.31	.0437	6.30	6.54	.0475
12	5.86	5.66	.0194	6.28	6.12	.0484	6.26	6.42	.0523
13	5.75	5.47	.0251						
14	5.54	5.30	.0330						
15	5.36	5.11	.0392						
16	5.16	4.99	.0454						
17	5.07	4.87	.0499						
18	4.89	4.72	.0564						

RESIDUAL STRESS DATA

Step	Specimen No. 223, $t_o = .2514$			Specimen No. 224, $t_o = .2513$			Specimen No. 225, $t_o = .2511$		
	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	1.01	.97	.0020	.81	.98	.0020	.74	.74	.0015
3	2.02	1.99	.0035	1.81	2.00	.0035	2.36	2.41	.0040
4	3.15	3.16	.0050	2.92	2.95	.0050	3.47	3.54	.0055
5	6.06	5.98	.0101	5.89	6.11	.0103	6.62	6.64	.0010
6	6.67	6.67	.0151	6.49	6.73	.0158	7.15	7.11	.0176
7	6.24	6.39	.0226	6.20	6.45	.0231	6.84	6.74	.0234
8	5.75	6.03	.0289	5.93	6.17	.0286	6.49	6.40	.0289
9	5.27	5.62	.0354	5.67	5.83	.0349	6.11	5.95	.0354
10	4.78	5.29	.0422	5.29	5.49	.0417	5.76	5.49	.0412
11	4.25	4.92	.0478	4.90	5.16	.0498	5.41	5.21	.0464
12	3.69	4.60	.0528	4.67	4.74	.0530	5.06	4.78	.0527

Step	Specimen No. 226, $t_o = .2476$			Specimen No. 227, $t_o = .2575$			Specimen No. 228, $t_o = .2475$		
	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.93	1.05	.0020	1.36	.94	.0015	1.13	1.17	.0017
3	2.69	2.93	.0044	3.26	2.90	.0041	3.05	2.94	.0040
4	3.94	4.20	.0059	4.78	4.40	.0057	4.73	4.62	.0057
5	6.81	7.27	.0114	9.80	9.33	.0113	8.50	8.36	.0106
6	7.30	7.72	.0181	11.42	10.89	.0180	9.82	9.86	.0173
7	7.04	7.49	.0243	11.39	10.80	.0240	9.62	9.58	.0228
8	6.81	7.26	.0290	11.21	10.62	.0301	9.35	9.29	.0285
9	6.62	7.04	.0342	11.13	10.42	.0363	9.12	9.07	.0337
10	6.34	6.79	.0401	11.03	11.23	.0414	8.88	8.79	.0386
11	6.06	6.48	.0468	10.98	10.11	.0469	8.58	8.58	.0448
12	5.78	6.18	.0530	10.90	9.97	.0525	8.25	8.16	.0515

RESIDUAL STRESS DATA

Step	Specimen No. 229 $t_o = .2465$			Specimen No. 230 $t_o = .2583$			Specimen No. 231 $t_o = .2509$		
	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.15	.17	.0002	.11	.10	.0002	.14	.17	.0003
3	.15	.18	.0005	.11	.09	.0005	.28	.30	.0005
4	.03	.06	.0007	.12	.13	.0008	.32	.33	.0006
5	.3[illegible]	.35	.0010	.25	.22	.0010	.45	.47	.0008
6	.06	.38	.0010	.30	.29	.0010	.47	.49	.0010
7	1.06	1.20	.0027	.47	.50	.0031	1.60	1.63	.0029
8	1.67	1.75	.0034	1.76	1.75	.0036	2.00	2.06	.0035
9	2.15	2.28	.0042	2.26	2.22	.0046	2.48	2.62	.0042
10	3.26	3.60	.0059	3.40	3.38	.0064	4.22	4.18	.0060
11	5.23	5.45	.0086	5.02	4.98	.0090	5.91	5.90	.0080
12	7.73	8.23	.0140	7.34	7.01	.0145	9.30	9.31	.0134
13	8.01	8.51	.0197	7.50	7.09	.0191	9.88	9.89	.0194
14	7.89	8.47	.0256	7.20	6.79	.0258	9.61	9.53	.0255
15	7.71	8.27	.0308	6.96	6.51	.0315	9.33	9.22	.0312
16	7.47	8.13	.0372	6.56	6.03	.0364	8.91	8.81	.0372
17	7.44	7.98	.0419	6.28	5.71	.0426	8.61	8.38	.0435
18	7.32	7.85	.0473	6.06	5.43	.0473	8.29	8.11	.0481
19	7.17	7.62	.0530	5.81	4.89	.0522	7.95	7.71	.0525

Step	Specimen No. 232 $t_o = .2432$			Specimen No. 233 $t_o = .2520$			Specimen No. 234 $t_o = .2506$		
	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.25	.21	.0003	.15	.10	.0002	.15	.13	.0002
3	.33	.19	.0005	.24	.19	.0005	.26	.29	.0005
4	.42	.36	.0007	.30	.35	.0008	.43	.33	.0008
5	.53	.43	.0009	.45	.39	.0010	.47	.42	.0010
6	.52	.48	.0010	.61	.51	.0010	.54	.58	.0010
7	1.46	1.41	.0025	1.16	1.21	.0020	1.30	1.23	.0022
8	1.96	1.90	.0032	2.01	1.97	.0033	2.04	1.86	.0030
9	2.72	2.61	.0039	2.54	2.56	.0040	2.70	2.47	.0040
10	4.62	4.32	.0061	4.04	4.19	.0058	4.14	3.98	.0055
11	9.20	8.96	.0117	5.21	5.18	.0070	5.39	5.12	.0070
12	10.63	10.33	.0169	10.18	10.43	.0134	10.85	10.80	.0138
13	10.78	10.38	.0231	11.66	11.47	.0179	12.02	11.97	.0158
14	10.72	10.33	.0282	11.67	11.52	.0232	12.06	12.27	.0236
15	10.61	10.16	.0328	11.52	11.39	.0282	11.86	12.00	.0286
16	10.52	10.09	.0375	11.33	11.22	.0333	11.66	11.85	.0341
17	10.39	9.97	.0433	11.09	11.02	.0386	11.48	11.74	.0398
18	10.28	9.83	.0490	10.93	10.88	.0428	11.39	11.60	.0454
19				10.62	10.63	.0491	11.22	11.48	.0516
20				10.33	10.48	.0544	11.04	11.37	.0566

RESIDUAL STRESS DATA

	Specimen No. 235, $t_o = .2433$			Specimen No. 236, $t_o = .2480$			Specimen No. 237, $t_o = .2518$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.15	.09	.0002	.11	.07	.0002	.20	.17	.0002
3	.21	.15	.0005	.19	.10	.0005	.28	.21	.0005
4	.29	.20	.0007	.25	.08	.0007	.40	.35	.0008
5	.39	.28	.0010	.28	.13	.0010	.44	.37	.0008
6	.49	.39	.0012	.20	.22	.0012	.47	.38	.0010
7	.98	.83	.0029	1.01	.71	.0025	.94	.80	.0018
8	1.33	1.23	.0036	1.30	1.13	.0032	1.40	1.24	.0025
9	1.70	1.65	.0039	1.59	1.41	.0040	1.72	1.51	.0030
10	2.69	2.52	.0056	2.59	2.43	.0060	3.77	3.55	.0060
11	3.31	3.07	.0068	3.24	3.08	.0072	4.83	4.64	.0080
12	4.63	4.69	.0131	4.78	4.67	.0134	6.17	5.87	.0126
13	4.38	4.26	.0178	4.47	4.23	.0184	6.22	5.86	.0186
14	3.88	4.16	.0241	4.02	3.81	.0243	5.85	5.46	.0237
15	3.50	3.93	.0290	3.71	3.51	.0300	5.48	5.06	.0292
16	3.08	3.34	.0346	3.40	3.12	.0360	5.12	4.68	.0342
17	2.59	3.20	.0399	3.10	2.85	.0414	4.83	4.30	.0393
18	2.24	2.87	.0443	2.88	2.50	.0466	4.39	3.75	.0461
19	1.78	2.44	.0499	2.49	2.17	.0536	3.93	3.32	.0514
20	1.26	2.09	.0550	2.13	1.79	.0590			

	Specimen No. 238, $t_o = .2454$			Specimen No. 239, $t_o = .2518$			Specimen No. 240, $t_o = .2523$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.21	.21	.0002	.17	.19	.0002	.17	.17	.0002
3	.30	.25	.0005	.26	.31	.0005	.27	.21	.0005
4	.41	.37	.0007	.45	.42	.0008	.46	.38	.0008
5	.46	.42	.0010	.47	.52	.0008	.48	.39	.0010
6	.53	.51	.0010	.55	.58	.0010	.75	.54	.0010
7	1.21	1.17	.0022	1.33	1.37	.0020	1.09	1.10	.0020
8	1.54	1.48	.0027	1.82	1.81	.0028	1.77	1.82	.0028
9	1.90	1.82	.0032	2.24	2.11	.0030	3.61	3.57	.0030
10	3.83	4.04	.0064	4.94	4.74	.0063	4.24	4.22	.0060
11	5.32	5.28	.0083	6.66	6.40	.0086	5.82	5.80	.0081
12	6.68	6.58	.0128	8.56	8.50	.0136	8.34	8.15	.0136
13	6.61	6.57	.0196	8.72	8.62	.0202	8.68	8.36	.0202
14	6.38	6.27	.0243	8.31	8.28	.0259	8.46	8.18	.0250
15	6.20	6.18	.0294	8.07	8.00	.0307	8.23	7.94	.0305
16	5.97	6.04	.0344	7.66	7.69	.0365	7.96	7.71	.0363
17	5.74	5.76	.0405	7.38	7.39	.0410	7.73	7.47	.0424
18	5.45	5.61	.0464	7.02	6.99	.0473	7.67	6.98	.0492
19	4.60	5.35	.0523	6.74	6.69	.0529	7.22	6.72	.0555

RESIDUAL STRESS DATA

	Specimen No. 241 $t_o = .2487$			Specimen No. 242 $t_o = .2465$			Specimen No. 243 $t_o = .2521$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.03	.13	.0002	.14	.05	.0002	.18	.13	.0002
3	.06	.20	.0007	.26	.12	.0007	.34	.30	.0008
4	.21	.32	.0012	.34	.26	.0012	.61	.51	.0013
5	.53	.71	.0023	.74	.57	.0022	1.10	1.03	.0025
6	.87	1.06	.0030	1.20	.98	.0032	1.61	1.52	.0030
7	1.32	1.56	.0037	1.62	1.36	.0039	2.20	2.04	.0040
8	1.75	2.01	.0047	2.09	1.80	.0049	2.20	2.04	.0040
9	2.57	2.83	.0062	2.82	2.45	.0064	3.23	3.05	.0055
10	4.62	4.92	.0122	4.80	4.31	.0121	6.58	6.38	.0113
11	5.05	5.40	.0196	5.14	4.43	.0200	7.62	7.33	.0181
12	4.97	5.27	.0246	4.91	4.22	.0249	7.49	7.15	.0237
13	4.91	5.18	.0303	4.63	4.00	.0306	7.31	6.92	.0285
14	4.78	5.01	.0361	4.47	3.97	.0350	7.14	6.73	.0333
15	4.75	4.88	.0418	4.21	3.52	.0412	6.43	6.46	.0391
16	4.61	4.67	.0485	3.91	3.22	.0468	6.69	6.23	.0446
17	4.57	4.58	.0537	3.74	3.09	.0518	6.53	5.84	.0507
18	4.42	4.39	.0587	3.51	2.83	.0567	6.33	5.67	.0554

	Specimen No. 244 $t_o = .2520$			Specimen No. 245 $t_o = .2520$			Specimen No. 246 $t_o = .2508$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.13	.05	.0002	.13	.15	.0002	.13	.13	.0002
3	.29	.23	.0008	.32	.33	.0005	.33	.34	.0005
4	.61	.53	.0013	.51	.53	.0010	.47	.49	.0010
5	1.00	.85	.0020	.95	.93	.0015	.92	.97	.0018
6	1.60	1.40	.0030	1.56	1.50	.0025	1.60	1.61	.0028
7	2.04	1.85	.0038	2.23	3.11	.0035	2.28	2.28	.0038
8	2.69	2.51	.0048	3.48	3.46	.0050	3.51	3.50	.0050
9	2.65	2.51	.0048	5.72	5.72	.0076	5.71	5.71	.0078
10	6.00	5.88	.0106	8.75	8.75	.0118	8.95	9.03	.0125
11	7.13	6.94	.0174	10.30	10.38	.0169	10.47	10.41	.0183
12	6.91	6.67	.0227	10.42	10.52	.0219	10.31	10.42	.0246
13	6.55	6.33	.0282	10.08	10.08	.0277	10.18	10.39	.0296
14	6.19	5.94	.0338	9.92	10.04	.0328	10.04	10.19	.0341
15	5.83	5.62	.0388	9.69	9.84	.0375	9.93	10.02	.0396
16	5.42	5.11	.0444	9.35	9.58	.0423	9.73	9.86	.0456
17	5.07	4.78	.0494	9.11	9.07	.0474	9.53	9.66	.0516
18	4.61	4.38	.0552						

RESIDUAL STRESS DATA

	Specimen No. 247 $t_o = .2486$			Specimen No. 248 $t_o = .2519$			Specimen No. 249 $t_o = .2509$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.09	.12	.0002	.13	.09	.0002	.88	.87	.0022
3	.15	.22	.0005	.22	.16	.0005	1.66	1.60	.0035
4	.21	.28	.0007	.33	.24	.0008	2.08	1.96	.0043
5	.53	.63	.0017	.61	.44	.0018	6.68	6.63	.0110
6	.93	1.02	.0027	1.05	.86	.0028	8.39	8.31	.0166
7	1.49	1.61	.0037	1.48	1.23	.0035	8.52	8.45	.0228
8	2.44	2.49	.0052	2.42	2.16	.0050	8.11	8.08	.0291
9	3.82	3.92	.0075	3.74	3.46	.0073	7.72	7.78	.0344
10	6.55	6.69	.0127	6.28	5.82	.0128	7.37	7.46	.0396
11	7.63	7.81	.0186	7.12	6.59	.0181	7.10	7.08	.0462
12	7.68	7.89	.0202	7.03	6.55	.0242	6.93	7.04	.0474
13	7.71	7.81	.0286	6.96	6.45	.0290	6.56	6.76	.0539
14	7.65	7.75	.0336	6.66	6.18	.0345			
15	7.60	7.68	.0395	6.42	5.99	.0395			
16	7.54	7.60	.0455	6.15	5.81	.0451			
17	7.50	7.54	.0517	5.87	5.56	.0509			

	Specimen No. 250 $t_o = .2462$			Specimen No. 251 $t_o = .2467$			Specimen No. 252 $t_o = .2519$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	1.10	1.22	.0025	1.43	1.30	.0022	1.60	1.38	.0023
3	2.09	2.21	.0039	2.64	2.49	.0037	2.47	2.27	.0035
4	2.49	2.63	.0047	3.58	3.40	.0047	3.26	3.06	.0043
5	7.39	7.42	.0016	9.68	9.71	.0108	9.43	8.92	.0111
6	9.31	9.30	.0177	13.02	12.90	.0163	12.19	11.45	.0161
7	9.31	9.31	.0241	13.83	13.56	.0222	13.09	12.29	.0229
8	8.98	9.01	.0310	13.54	13.27	.0279	13.07	12.24	.0292
9	8.63	8.74	.0357	13.20	12.89	.0333	13.01	12.16	.0340
10	8.37	8.51	.0409	12.82	12.56	.0385	12.93	12.05	.0393
11	8.02	8.15	.0468	12.23	12.09	.0449	12.77	11.76	.0463
12	7.92	8.10	.0480	12.32	12.00	.0459	12.79	11.75	.0476
13	7.60	7.73	.0542	11.81	11.49	.0525	12.69	11.73	.0537

RESIDUAL STRESS DATA

Step	Specimen No. 253, t_o = .2516 dH_A	dH_B	dt	Specimen No. 254, t_o = .2511 dH_A	dH_B	dt	Specimen No. 255, t_o = .2485 dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.98	.89	.0020	.93	.70	.0020	.96	1.15	.0020
3	4.66	4.49	.0075	4.88	4.39	.0078	5.19	5.55	.0074
4	5.44	5.23	.0096	5.69	5.00	.0093	6.18	6.51	.0092
5	6.31	6.24	.0143	6.90	6.07	.0148	7.51	8.04	.0142
6	6.21	6.02	.0199	6.79	5.90	.0211	7.51	8.08	.0206
7	5.94	5.78	.0245	6.58	5.63	.0261	7.23	7.81	.0263
8	5.52	5.49	.0314	6.30	5.29	.0319	6.99	7.60	.0318
9	5.38	5.28	.0367	6.10	5.06	.0364	6.77	7.37	.0368
10	5.08	5.12	.0423	5.88	4.78	.0417	6.48	7.10	.0430
11	4.93	4.91	.0476	5.65	4.52	.0472	6.22	6.94	.0487
12	4.60	4.71	.0533	5.45	4.29	.0522	5.98	6.62	.0542

Step	Specimen No. 256, t_o = .2465 dH_A	dH_B	dt	Specimen No. 257, t_o = .2489 dH_A	dH_B	dt	Specimen No. 258, t_o = .2481 dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	1.00	1.27	.0020	1.23	1.12	.0016	1.10	1.23	.0017
3	5.35	6.07	.0080	2.82	2.62	.0032	2.68	2.80	.0032
4	6.30	7.00	.0094	2.80	2.61	.0032	3.85	3.99	.0045
5	7.69	8.62	.0145	8.22	8.11	.0087	9.79	10.24	.0102
6	7.58	8.53	.0210	12.71	12.15	.0138	14.47	14.95	.0156
7	7.26	8.21	.0266	14.80	14.20	.0189	16.22	16.63	.0208
8	6.92	7.87	.0320	15.08	14.40	.0251	16.24	16.62	.0273
9	6.61	7.58	.0370	15.06	14.32	.0301	16.03	16.41	.0325
10	6.31	7.33	.0426	14.89	14.12	.0366	15.61	16.09	.0387
11	6.00	7.02	.0481	14.79	13.99	.0423	15.33	15.86	.0444
12	5.67	7.68	.0537	14.60	13.81	.0480	14.95	15.52	.0501

RESIDUAL STRESS DATA

Step	Specimen No. 259, t_o = .2512			Specimen No. 260, t_o = .2520			Specimen No. 261, t_o = .2503		
	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.83	.72	.0018	.62	.90	.0018	1.57	1.35	.0025
3	2.03	1.82	.0033	1.86	2.24	.0033	2.82	2.51	.0040
4	2.90	2.71	.0045	1.85	2.22	.0033	3.75	3.46	.0048
5	7.92	7.93	.0105	6.79	7.64	.0093	8.66	8.50	.0100
6	11.46	11.81	.0158	10.32	11.21	.0141	13.26	12.99	.0150
7	13.04	13.09	.0203	12.59	13.56	.0197	16.04	15.75	.0208
8	13.16	13.12	.0271	12.98	14.04	.0272	16.69	16.33	.0263
9	12.79	12.71	.0332	13.00	13.91	.0323	16.90	16.34	.0315
10	12.22	12.19	.0394	12.67	13.76	.0393	16.71	16.11	.0383
11	11.71	11.73	.0455	12.40	13.58	.0449	16.61	15.94	.0438
12	11.21	11.23	.0512	12.23	13.40	.0509	16.51	15.79	.0503

Step	Specimen No. 262, t_o = .2483			Specimen No. 263, t_o = .2483			Specimen No. 264, t_o = .2489		
	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	1.87	1.69	.0027	1.93	1.98	.0025	2.19	2.18	.0030
3	3.54	3.38	.0045	3.86	3.93	.0045	4.27	4.24	.0047
4	4.52	4.38	.0055	4.96	5.00	.0056	5.19	5.23	.0060
5	10.49	9.90	.0112	11.32	11.81	.0109	11.58	11.73	.0112
6	14.18	13.54	.0159	16.88	16.94	.0159	16.85	16.92	.0162
7	16.77	15.95	.0214	20.39	20.25	.0216	20.61	20.40	.0222
8	17.22	16.33	.0276	21.91	21.49	.0281	21.62	21.31	.0281
9	17.07	16.23	.0328	21.82	21.45	.0335	21.61	21.27	.0328
10	16.81	15.99	.0387	21.41	21.12	.0397	21.30	21.03	.0383
11	16.68	15.83	.0432	21.10	20.86	.0457	21.09	20.83	.0433
12	16.38	15.57	.0494	20.65	20.52	.0524	20.68	20.50	.0500

RESIDUAL STRESS DATA

Step	Specimen No. 265 (t_o = .2517) dH_A	dH_B	dt	Specimen No. 266 (t_o = .2510) dH_A	dH_B	dt	Specimen No. 267 (t_o = .2507) dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.84	.82	.0018	.84	.91	.0018	1.09	.94	.0018
3	2.50	2.47	.0038	2.44	2.58	.0035	2.67	2.53	.0035
4	3.00	3.03	.0043	3.09	3.22	.0043	3.27	3.12	.0040
5	8.60	8.96	.0106	8.93	9.21	.0105	9.75	9.42	.0103
6	14.79	15.43	.0164	14.58	14.90	.0158	16.04	15.80	.0160
7	18.78	19.33	.0222	18.60	18.99	.0218	20.72	20.83	.0216
8	20.78	21.24	.0277	20.18	20.50	.0269	22.71	22.90	.0261
9	20.31	20.74	.0342	20.64	21.08	.0331	23.51	23.64	.0336
10	21.39	21.75	.0408	20.49	20.99	.0407	23.23	23.30	.0396
11	21.18	21.59	.0466	20.33	20.89	.0464	22.89	22.87	.0451
12	20.90	21.27	.0526	20.16	20.71	.0525	22.53	22.51	.0511

Step	Specimen No. 268 (t_o = .2517) dH_A	dH_B	dt	Specimen No. 269 (t_o = .2464) dH_A	dH_B	dt	Specimen No. 270 (t_o = .2520) dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.93	1.05	.0018	1.30	1.27	.0020	1.40	1.23	.0020
3	2.32	2.46	.0035	3.30	3.21	.0039	3.23	3.13	.0040
4	3.02	3.18	.0043	5.44	5.43	.0057	5.23	5.18	.0055
5	8.89	9.54	.0103	11.90	11.90	.0113	10.95	11.16	.0111
6	14.13	14.9[illegible]	.0164	18.43	18.62	.0165	16.34	16.83	.0159
7	17.02	17.72	.0216	23.27	23.79	.0219	21.63	21.67	.0209
8	17.89	18.69	.0264	26.03	26.92	.0278	25.39	25.06	.0265
9	17.98	18.83	.0327	27.24	28.10	.0340	27.02	26.55	.0325
10	17.62	18.53	.0390	27.44	28.26	.0402	27.45	26.95	.0391
11	17.31	18.30	.0448	27.33	28.09	.0456	27.31	26.87	.0438
12	17.01	17.92	.0506	27.23	27.88	.0510	27.10	26.70	.0491

RESIDUAL STRESS DATA

Step	Specimen No. 271 $t_o = .2585$ dH$_A$	dH$_B$	dt	Specimen No. 272 $t_o = .2587$ dH$_A$	dH$_B$	dt	Specimen No. 273 $t_o = .2499$ dH$_A$	dH$_B$	dt
1	0	0	0	0	0	0	0	0	0
2	.02	.14	.0002	.11	.09	.0002	0	.09	.0002
3	.03	.30	.0007	.10	.21	.0007	-.11	.05	.0007
4	-.10	.26	.0012	-.03	.17	.0010	-.21	.01	.0010
5	-.83	-.47	.0029	-.57	-.25	.0031	-.29	-.06	.0010
6	-1.29	-.98	.0051	-.91	-.63	.0051	-.57	-.23	.0026
7	-1.42	-1.09	.0060	-1.02	-.72	.0063	-.71	-.26	.0042
8	-1.58	-1.23	.0075	-1.13	-.85	.0075	-.71	-.25	.0052
9	-1.64	-1.28	.0087	-1.22	-.94	.0084	-.69	-.26	.0060
10	-1.71	-1.34	.0104	-1.35	-1.04	.0099	-.70	-.26	.0095
11	-1.75	-1.38	.0116	-1.37	-1.07	.0113	-.71	-.26	.0122
12	-1.76	-1.39	.0145	-1.51	-1.23	.0140	-.69	-.27	.0195
13	-1.80	-1.47	.0169	-1.59	-1.31	.0166	-.70	-.26	.0257
14	-1.83	-1.49	.0207	-1.39	-1.29	.0166	-.70	-.26	.0320
15	-1.99	-1.61	.0273	-1.67	-1.58	.0234	-.70	-.27	.0377
16	-2.22	-1.88	.0348	-2.02	-1.96	.0306	-.71	-.30	.0462
17	-2.41	-2.07	.0413	-2.31	-2.26	.0372	-.76	-.29	.0527
18	-2.60	-2.28	.0454	-2.53	-2.50	.0415	-.73	-.30	.0602
19	-2.79	-2.51	.0509	-2.87	-2.85	.0473	-.73	-.31	.0675
20	-2.90	-2.68	.0555	-2.98	-3.04	.0521	-.71	-.30	.0735
21	-3.19	-3.00	.0613	-3.27	-3.41	.0579	-.68	-.26	.0807
22	-3.69	-3.52	.0668	-3.78	-4.01	.0632	-.68	-.27	.0865
23	-4.10	-4.00	.0731	-4.19	-4.45	.0700	-.61	-.24	.0937
24	-4.46	-4.39	.0787	-4.79	-5.03	.0755	-.59	-.24	.0995
25	-4.86	-4.76	.0810	-4.99	-5.23	.0777	-.53	-.19	.1055
26	-5.27	-5.25	.0871	-5.46	-5.73	.0832	-.49	-.11	.1115
27	-5.77	-5.72	.0939	-6.19	-6.51	.0905	-.41	-.11	.1185
28	-6.29	-6.26	.1011	-7.18	-7.42	.0977	-.33	-.17	.1240
29	-6.71	-6.60	.1047	-7.86	-8.21	.1020	-.40	-.21	.1317
30	-7.40	-7.39	.1103	-8.90	-9.33	.1076			
31	-7.98	-7.97	.1158	-9.97	-10.56	.1129			
32	-8.96	-9.10	.1236	-11.39	-12.31	.1204			

RESIDUAL STRESS DATA

	Specimen No. 274 $t_o = .2504$			Specimen No. 275 $t_o = .2515$			Specimen No. 276 $t_o = .2517$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.15	.03	.0003	.09	-.02	.0003	-.01	.08	.0003
3	.14	-.02	.0005	.14	.02	.0003	.02	.17	.0003
4	.04	-.12	.0008	.12	-.06	.0005	-.08	.10	.0005
5	-.01	-.20	.0010	.04	-.10	.0008	-.14	.08	.0005
6	-.08	-.29	.0013	-.01	-.16	.0010	-.26	-.02	.0010
7	-.36	-.76	.0025	-.01	-.16	.0013	-.31	-.03	.0013
8	-.55	-.94	.0038	-.29	-.43	.0025	-.61	-.27	.0023
9	-.57	-.99	.0050	-.49	-.58	.0033	-.79	-.47	.0033
10	-.60	-1.08	.0065	-.67	-.56	.0043	-.80	-.51	.0043
11	-.61	-1.12	.0095	-1.29	-1.06	.0068	-1.21	-.72	.0065
12	-.61	-1.12	.0123	-.89	-1.03	.0091	-1.11	-.62	.0088
13	-.74	-1.04	.0173	-1.31	-1.43	.0151	-1.51	-1.01	.0159
14	-.72	-1.23	.0230	-1.39	-1.56	.0211	-1.73	-1.26	.0224
15	-.72	-1.24	.0293	-1.59	-1.76	.0274	-2.07	-1.52	.0284
16	-.71	-1.28	.0353	-1.97	-2.16	.0342	-2.61	-2.02	.0365
17	-.78	-1.33	.0406	-2.39	-2.37	.0402	-2.91	-2.34	.0438
18	-.84	-1.38	.0468	-2.44	-2.64	.0470	-3.21	-2.62	.0486
19	-.84	-1.46	.0526	-2.71	-2.86	.0531	-3.61	-2.96	.0574
20	-.94	-1.50	.0581	-3.03	-3.16	.0596	-3.86	-3.25	.0647
21	-.96	-1.53	.0636	-3.49	-3.56	.0676	-4.39	-3.60	.0722
22	-.96	-1.57	.0704	-3.89	-3.79	.0754	-4.73	-4.14	.0798
23	-1.04	-1.63	.0766	-4.21	-4.28	.0815	-5.02	-4.41	.0876
24	-1.14	-1.74	.0839	-4.52	-4.54	.0890	-5.35	-4.74	.0954
25	-1.19	-1.74	.0889	-4.84	-4.78	.0946	-5.89	-5.00	.1009
26	-1.28	-1.80	.0936	-5.14	-5.12	.1014	-6.04	-5.32	.1085
27	-1.27	-1.82	.1032	-5.53	-5.49	.1092	-6.43	-5.72	.1160
28	-1.41	-2.12	.1119	-6.07	-5.98	.1167	-6.81	-6.04	.1241
29	-1.96	-1.98	.1184						
30	-1.58	-2.06	.1239						
31	-1.63	-2.13	.1295						

RESIDUAL STRESS DATA

Step	Specimen No. 277 $t_o = .2488$			Specimen No. 278 $t_o = .2435$			Specimen No. 279 $t_o = .2499$		
	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.47	.31	.0005	.47	.29	.0003	.35	.29	.0005
3	1.54	1.21	.0015	1.87	1.22	.0015	1.86	1.64	.0019
4	2.21	1.82	.0020	2.37	1.82	.0022	3.02	2.32	.0024
5	3.21	3.15	.0037	3.64	3.09	.0040	5.03	3.87	.0034
6	3.64	3.92	.0065	3.86	3.90	.0062	7.02	6.07	.0063
7	3.70	3.82	.0082	3.64	3.81	.0085	7.80	7.06	.0083
8	3.90	3.93	.0187	4.23	4.03	.0190	9.01	7.90	.0197
9	4.02	4.03	.0202	4.34	4.12	.0205	9.27	7.95	.0209
10	4.08	4.05	.0284	4.40	4.13	.0280	10.24	8.44	.0292
11	4.14	4.14	.0323	4.44	4.16	.0327	10.88	8.75	.0338
12	4.22	4.23	.0396	4.48	4.21	.0400	11.76	9.08	.0412
13	4.27	4.31	.0468	4.52	4.24	.0477	12.81	9.43	.0492
14	4.31	4.34	.0522	4.58	4.25	.0537	13.44	9.67	.0533

Step	Specimen No. 280 $t_o = .2449$			Specimen No. 281 $t_o = .2491$			Specimen No. 282 $t_o = .2505$		
	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.27	.33	.0005	.27	.19	.0005	.41	.20	.0003
3	1.73	1.67	.0017	1.30	.89	.0017	2.03	1.58	.0023
4	2.90	2.38	.0022	1.72	1.18	.0012	2.62	1.80	.0025
5	4.26	3.37	.0029	4.97	3.77	.0037	6.02	4.53	.0050
6	6.01	5.48	.0054	7.47	5.77	.0060	8.07	6.61	.0070
7	6.82	6.88	.0078	8.54	6.76	.0067	8.58	7.28	.0080
8	7.04	7.48	.0181	9.30	8.77	.0142	8.69	8.39	.0160
9	7.13	7.47	.0196	9.39	8.77	.0147	8.92	8.54	.0165
10	7.30	7.58	.0274	9.49	9.06	.0199	8.93	8.58	.0213
11	7.34	7.74	.0323	9.59	9.24	.0269	8.98	8.65	.0288
12	7.41	7.74	.0397	9.80	9.52	.0359	9.34	8.81	.0386
13	7.44	7.69	.0470	9.90	9.65	.0436	9.61	8.98	.0468
14	7.47	7.72	.0526	10.01	9.76	.0503	9.96	9.17	.0544

RESIDUAL STRESS DATA

	Specimen No. 283 $t_o = .2484$			Specimen No. 284 $t_o = .2514$			Specimen No. 285 $t_o = .2507$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.40	.10	.0007	.20	.20	.0010	1.00	.20	.0008
3	1.30	1.20	.0022	1.70	1.50	.0030	.90	.80	.0010
4	1.60	1.10	.0022	2.10	1.80	.0030	1.90	1.70	.0023
5	4.60	4.10	.0050	5.80	4.50	.0058	2.60	1.90	.0028
6	8.90	6.60	.0072	9.00	7.00	.0078	4.70	3.70	.0042
7	11.60	8.20	.0080	11.30	8.30	.0085	9.70	7.90	.0088
8	13.70	13.20	.0157	13.90	12.90	.0163	12.60	12.00	.0130
9	13.90	13.40	.0161	14.00	13.20	.0168	13.60	13.10	.0150
10	13.80	14.00	.0206	14.40	13.20	.0211	13.90	14.20	.0228
11	14.00	14.30	.0281	15.00	13.80	.0287	14.40	14.70	.0288
12	14.60	14.70	.0375	15.50	14.10	.0382	14.50	14.70	.0361
13	14.50	14.90	.0460	15.80	14.20	.0460	14.80	15.10	.0441
14	15.50	15.30	.0534	16.10	14.30	.0530	15.50	15.80	.0511
15							15.60	15.80	.0592

	Specimen No. 286 $t_o = .2435$			Specimen No. 287 $t_o = .2492$			Specimen No. 288 $t_o = .2487$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.59	.50	.0005	.20	.30	.0007	.60	.30	.0007
3	1.10	.90	.0010	.20	.30	.0007	.80	.40	.0010
4	2.90	1.60	.0019	1.10	1.30	.0020	1.90	2.00	.0022
5	3.20	2.10	.0024	2.00	1.90	.0030	2.60	2.10	.0027
6	4.90	3.50	.0039	4.00	3.20	.0045	4.80	3.70	.0045
7	10.40	7.40	.0080	9.00	7.10	.0087	10.20	7.90	.0087
8	14.00	12.00	.0124	13.90	12.00	.0120	14.90	12.90	.0129
9	15.30	13.20	.0146	16.90	14.10	.0145	17.70	15.00	.0152
10	15.90	14.20	.0217	19.50	18.90	.0214	19.60	18.60	.0221
11	16.00	14.30	.0270	20.20	19.70	.0252	19.80	19.30	.0274
12	16.10	14.10	.0336	20.20	20.00	.0332	20.00	19.40	.0338
13	16.60	14.10	.0409	20.40	20.10	.0401	20.60	19.40	.0410
14	17.10	14.60	.0475	20.90	20.30	.0469	20.80	19.80	.0473
15	17.00	14.30	.0548	20.70	20.10	.0543	20.70	19.30	.0545

RESIDUAL STRESS DATA

	Specimen No. 289 $t_o = .2478$			Specimen No. 290 $t_o = .2436$			Specimen No. 291 $t_o = .2506$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.80	.80	.0005	.40	.40	.0002	1.07	1.07	.0005
3	1.70	1.50	.0015	2.60	.90	.0010	2.25	2.02	.0010
4	3.20	2.[illegible]0	.0030	3.50	2.30	.0022	2.87	2.52	.0015
5	5.30	4.40	.0045	5.60	3.90	.0039	4.16	3.83	.0028
6	6.90	4.60	.0052	9.50	4.60	.0046	6.90	6.79	.0062
7	11.80	8.70	.0084	10.50	8.10	.0078	7.18	6.96	.0062
8	19.10	16.90	.0176	20.00	17.80	.0171	9.37	8.66	.0074
9	20.80	19.40	.0292	23.00	21.60	.0292	11.03	10.25	.0082
10	21.00	19.80	.0357	23.30	21.70	.0356	13.60	12.85	.0113
11	21.20	19.90	.0421	23.60	22.00	.0424	15.35	14.26	.0123
12	22.00	20.00	.0523	24.30	22.70	.0424	17.32	16.27	.0136
13	21.10	19.90	.0585	24.50	22.70	.0626	19.56	18.58	.0157
14							21.97	21.08	.0185
15							24.35	23.38	.0200
16							26.37	25.58	.0221
17							27.66	26.71	.0234
18							28.47	27.08	.0244
19							29.24	27.77	.0254
20							29.82	29.00	.0267
21							30.04	29.14	.0293
22							30.93	30.11	.0344
23							31.37	30.41	.0406
24							31.45	30.57	.0447
25							31.65	30.79	.0524

RESIDUAL STRESS DATA

	Specimen No. 292 $t_o = .2475$			Specimen No. 293 $t_o = .2383$			Specimen No. 294 $t_o = .2507$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	1.15	1.11	.0005	-.02	0	.0001	.20	.18	.0002
3	2.21	2.08	.0013	-.02	0	.0002	.33	.23	.0002
4	2.86	2.71	.0018	-.08	.02	.0008	.71	.62	.0010
5	4.20	4.15	.0036	.17	.08	.0020	.84	.71	.0020
6	7.04	7.09	.0064	.49	.38	.0092	1.37	1.20	.0097
7	7.26	7.29	.0064	.58	.45	.0102	1.51	1.32	.0110
8	9.13	8.98	.0077	.70	.50	.0133	1.68	1.50	.0136
9	10.67	10.59	.0090	.88	.59	.0168	1.89	1.69	.0174
10	12.97	12.81	.0113	1.12	.79	.0222	2.24	2.03	.0230
11	14.39	14.10	.0124	1.30	.89	.0245	2.56	2.26	.0256
12	16.00	15.78	.0134	1.68	1.12	.0334	3.01	2.72	.0338
13	18.18	18.01	.0157	1.79	1.19	.0360	3.19	2.90	.0373
14	20.40	20.24	.0180	1.98	1.30	.0406	3.36	3.09	.0414
15	22.42	22.35	.0193	2.20	1.48	.0457	3.61	3.36	.0473
16	24.79	24.93	.0216	2.56	1.69	.0533	3.90	3.72	.0550
17	26.20	26.14	.0229	2.81	1.97	.0564	4.17	3.98	.0583
18	27.07	26.92	.0237	2.88	1.91	.0584	4.20	4.01	.0601
19	27.94	27.63	.0245	2.97	1.95	.0600	4.27	4.10	.0616
20	28.66	28.35	.0258	3.00	1.98	.0610	4.30	4.13	.0627
21	29.27	29.03	.0281	3.08	2.01	.0625	4.43	4.21	.0642
22	30.60	30.21	.0325	3.20	2.12	.0648	4.48	4.33	.0662
23	31.38	30.73	.0384	3.50	2.33	.0714	4.67	4.60	.0724
24	31.56	30.86	.0423	3.82	2.59	.0765	5.01	5.01	.0770
25	31.69	31.06	.0492	4.02	2.69	.0791	5.13	5.15	.0793
26				4.08	2.71	.0791	5.22	5.22	.0793
27				4.09	2.74	.0809	5.23	5.23	.0811
28				4.20	2.97	.0832	5.23	5.31	.0836
29				4.38	2.99	.0865	5.40	5.47	.0872
30				4.63	3.15	.0936	5.57	5.74	.0913

RESIDUAL STRESS DATA

	Specimen No. 295 $t_o = .2423$			Specimen No. 296 $t_o = .2465$			Specimen No. 297 $t_o = .2467$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.18	.25	.0002	.17	.27	.0002	.22	.26	.0002
3	.71	.92	.0007	.70	.87	.0007	.76	.83	.0007
4	1.09	1.40	.0012	1.02	1.26	.0014	1.20	1.35	.0012
5	1.77	2.08	.0019	1.62	2.03	.0020	2.11	2.45	.0020
6	1.75	2.03	.0027	1.52	2.10	.0027	2.96	3.28	.0027
7	1.68	1.88	.0034	1.38	2.03	.0034	3.45	3.78	.0037
8	1.52	1.65	.0040	1.28	1.78	.0039	3.47	3.84	.0039
9	1.07	1.05	.0068	.70	1.20	.0071	2.91	3.41	.0070
10	.88	.85	.0097	.83	1.15	.0098	2.35	3.04	.0103
11	.34	.24	.0121	.32	.70	.0123	1.58	2.41	.0128
12	-.10	-.18	.0145	-.13	.35	.0150	1.00	1.95	.0155
13	-.53	-.76	.0167	-.50	-.05	.0167	.54	1.57	.0177
14	-.94	-1.18	.0194	-.83	-.36	.0194	-.07	1.07	.0207
15	-1.45	-1.76	.0221	-1.40	-.88	.0222	-.63	.62	.0229
16	-1.67	-2.04	.0250	-1.62	-1.01	.0256	-.98	.34	.0263
17	-2.12	-2.61	.0272	-2.11	-1.48	.0283	-1.49	-.16	.0288
18	-2.54	-3.24	.0305	-2.79	-2.05	.0316	-1.86	-.64	.0320
19	-2.81	-3.61	.0335	-2.91	-2.16	.0347	-2.24	-1.07	.0352
20	-1.60	-2.67	.0364	-1.29	-.52	.0374	-1.56	-.75	.0382
21	-2.24	-3.50	.0390	-1.99	-1.20	.0399	-2.19	-1.42	.0406
22	-2.90	-4.43	.0417	-2.91	-2.01	.0428	-2.55	-2.08	.0433
23	-2.72	-4.58	.0448	-2.99	-2.17	.0455	-2.38	-2.26	.0460
24	-2.99	-5.46	.0480	-4.02	-2.94	.0490	-2.56	-2.92	.0495

RESIDUAL STRESS DATA

	Specimen No. 298 $t_o = .2417$			Specimen No. 299 $t_o = .2412$			Specimen No. 300 $t_o = .2460$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.14	.25	.0002	.19	.19	.0002	.16	.21	.0002
3	.59	.80	.0007	.69	.92	.0007	.61	.79	.0007
4	1.08	1.38	.0012	1.04	1.22	.0010	.94	1.25	.0010
5	2.00	2.58	.0019	1.89	2.17	.0017	1.61	1.82	.0017
6	2.77	3.58	.0027	2.51	2.93	.0021	1.98	2.06	.0022
7	3.20	4.30	.0034	2.94	3.52	.0026	2.40	3.05	.0024
8	3.11	4.36	.0040	4.17	5.12	.0038	3.37	4.61	.0039
9	2.79	4.17	.0070	4.65	5.82	.0045	4.08	5.57	.0046
10	3.06	4.35	.0099	4.50	5.81	.0053	3.89	5.16	.0051
11	2.78	3.87	.0128	4.42	5.72	.0055	3.78	5.11	.0056
12	2.53	3.48	.0155	4.39	5.65	.0069	3.85	5.13	.0068
13	2.39	3.26	.0176	4.23	5.53	.0076	3.67	5.01	.0077
14	2.38	3.14	.0201	3.68	5.00	.0100	3.26	4.62	.0097
15	2.10	2.74	.0227	3.44	4.18	.0129	3.15	4.52	.0123
16	2.20	2.77	.0254	3.30	4.14	.0136	2.95	4.30	.0131
17	1.80	2.24	.0280	2.79	3.92	.0155	2.66	3.95	.0155
18	1.43	1.70	.0314	2.27	3.25	.0186	2.20	3.33	.0179
19	1.28	1.67	.0348	1.99	2.75	.0220	2.00	2.99	.0210
20	3.11	3.70	.0380	1.35	2.02	.0248	1.45	2.28	.0240
21	2.39	3.06	.0404	.92	1.43	.0277	1.08	1.81	.0269
22	1.60	2.34	.0430	2.19	2.56	.0306	2.21	2.81	.0298
23	1.48	2.43	.0462	1.39	1.63	.0334	1.53	2.01	.0324
24	.40	1.55	.0491	.81	.93	.0358	1.17	1.21	.0353
25				.32	.23	.0389	.85	.65	.0387
26				-.08	-.38	.0418	.27	-.07	.0414
27				-.28	-.74	.0447	.17	-.37	.0443
28				-.66	-1.27	.0475	-.16	-.72	.0474

RESIDUAL STRESS DATA

	Specimen No. 301 $t_o = .2278$			Specimen No. 302 $t_o = .2437$			Specimen No. 303 $t_o = .2409$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.14	.24	.0002	.09	.13	.0002	.03	.10	.0001
3	.49	.83	.0007	.62	.64	.0007	.30	.50	.0006
4	1.08	1.32	.0011	.96	1.01	.0011	.56	.85	.0010
5	1.92	2.27	.0018	1.63	1.84	.0017	1.42	1.75	.0017
6	2.65	3.09	.0023	2.22	2.55	.0022	2.07	2.57	.0024
7	3.21	3.76	.0026	2.73	3.11	.0025	2.71	3.30	.0029
8	5.23	6.23	.0039	4.33	5.11	.0039	2.94	3.60	.0031
9	6.24	7.21	.0046	5.12	5.93	.0046	3.50	4.30	.0034
10	6.72	7.72	.0052	6.65	6.61	.0051	5.43	6.72	.0051
11	7.27	8.32	.0055	6.20	7.03	.0056	6.17	7.72	.0058
12	8.35	9.42	.0070	7.21	8.03	.0068	7.67	9.50	.0070
13	8.37	9.47	.0077	7.22	8.09	.0075	8.20	10.20	.0079
14	7.65	9.01	.0102	6.98	7.79	.0100	8.45	10.71	.0094
15	7.12	7.39	.0130	6.92	7.66	.0127	8.55	10.85	.0101
16	6.80	8.52	.0141	6.61	7.50	.0134	8.04	10.50	.0125
17	6.17	8.11	.0164	6.33	7.24	.0158	7.41	9.66	.0156
18	5.21	7.49	.0191	5.94	6.81	.0185	6.94	9.70	.0183
19	4.79	6.92	.0225	5.69	6.53	.0217	6.54	9.24	.0212
20	3.89	6.13	.0254	5.05	5.94	.0248	5.96	8.73	.0250
21	3.10	5.43	.0282	4.65	5.43	.0277	5.76	8.54	.0282
22	5.33	7.51	.0316	5.95	6.78	.0304	6.93	9.78	.0313
23	4.46	6.54	.0348	5.25	6.14	.0329	6.05	8.87	.0344
24	3.48	5.50	.0377	4.65	5.46	.0353	5.73	8.51	.0368
25	3.11	4.95	.0416	4.19	5.02	.0387	5.93	7.63	.0392
26	2.65	4.27	.0448	5.26	4.44	.0411	4.34	6.91	.0426
27	2.69	4.05	.0479	3.26	4.19	.0441	3.95	6.45	.0448
28	2.41	3.56	.0511	2.83	3.74	.0472	3.74	6.01	.0479
29							4.54	6.82	.0479

RESIDUAL STRESS DATA

Step	Specimen No. 304 $t_o = .2432$ dH_A	dH_B	dt	Specimen No. 305 $t_o = .2452$ dH_A	dH_B	dt	Specimen No. 306 $t_o = .2413$ dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.01	.11	.0002	-.01	.09	.0002	-.03	-.11	.0001
3	.34	.47	.0007	.30	.43	.0007	.21	.22	.0006
4	.64	.80	.0010	.60	.68	.0010	.53	.46	.0009
5	1.79	1.75	.0017	1.11	1.24	.0017	1.27	1.30	.0017
6	2.10	2.58	.0024	1.78	2.13	.0024	1.85	1.89	.0022
7	2.84	3.43	.0029	2.58	2.90	.0029	2.53	2.59	.0027
8	3.06	3.70	.0032	3.00	3.15	.0023	2.81	2.94	.0030
9	3.56	4.29	.0037	3.14	3.88	.0034	3.29	3.50	.0034
10	5.09	6.01	.0049	5.11	6.06	.0051	5.12	5.85	.0049
11	5.82	6.84	.0059	6.11	7.24	.0059	6.14	7.05	.0058
12	7.07	8.03	.0069	7.66	9.40	.0071	7.71	8.77	.0070
13	7.53	8.50	.0076	8.51	10.36	.0078	8.73	9.84	.0077
14	7.78	8.81	.0093	9.91	12.05	.0090	10.35	11.62	.0091
15	7.75	8.83	.0103	10.69	12.97	.0098	11.35	12.79	.0101
16	7.07	8.18	.0130	11.83	14.37	.0122	12.33	14.12	.0128
17	6.25	7.57	.0157	11.83	14.23	.0152	12.31	14.43	.0156
18	5.86	6.98	.0186	11.63	13.89	.0183	12.12	14.38	.0185
19	5.53	6.53	.0211	11.38	13.39	.0210	11.87	14.20	.0207
20	5.22	6.00	.0252	10.99	12.67	.0244	11.43	14.07	.0245
21	4.84	5.45	.0287	10.75	12.26	.0276	11.10	13.88	.0272
22	5.54	6.53	.0321	11.61	12.90	.0308	11.56	14.46	.0301
23	4.91	5.07	.0343	11.05	12.13	.0332	10.76	13.80	.0332
24	4.47	4.47	.0375	10.72	11.64	.0357	10.28	10.39	.0361
25	3.96	3.63	.0397	9.97	10.76	.0381	9.59	12.73	.0387
26	3.65	3.07	.0426	9.63	10.16	.0416	9.26	12.33	.0421
27	3.42	2.61	.0451	9.41	9.77	.0440	8.98	12.22	.0445
28	3.54	2.45	.0485	9.32	9.56	.0469	8.69	12.21	.0479
29	3.97	2.82	.0485	9.93	10.15	.0469	9.56	12.73	.0479

RESIDUAL STRESS DATA

Step	Specimen No. 307, $t_o = .2448$			Specimen No. 308, $t_o = .2284$			Specimen No. 309, $t_o = .2372$		
	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.14	.09	.0002	.23	.11	.0002	.11	.22	.0002
3	.40	.39	.0005	.49	.35	.0007	.35	.53	.0007
4	.61	.57	.0007	.76	.60	.0009	.69	.27	.0009
5	1.22	1.19	.0015	1.54	1.43	.0018	1.14	1.44	.0017
6	1.76	1.87	.0020	2.32	2.20	.0023	1.77	2.19	.0024
7	2.13	2.40	.0024	2.90	2.91	.0029	2.21	2.75	.0028
8	2.40	2.72	.0027	3.21	3.25	.0030	2.55	3.12	.0031
9	2.91	3.24	.0030	3.82	3.95	.0035	3.04	3.69	.0036
10	4.59	5.32	.0046	5.83	6.35	.0050	4.69	5.79	.0050
11	5.88	6.79	.0056	7.39	8.06	.0062	6.28	7.55	.0059
12	6.75	7.84	0068	8.35	9.28	.0071	7.76	9.13	.0071
13	7.17	8.35	.0081	9.18	10.15	.0078	8.90	10.55	.0081
14	7.39	8.64	.0108	9.96	10.88	.0110	12.14	14.40	.0109
15	7.20	8.23	.0132	9.64	11.16	.0133	15.52	15.99	.0128
16	6.92	7.93	.0162	9.37	10.75	.0164	14.80	17.28	.0159
17	6.40	7.23	.0191	8.82	10.01	.0194	14.23	16.71	.0190
18	6.17	6.68	.0220	8.22	9.33	.0226	13.67	16.15	.0223
19	5.58	6.41	.0250	7.98	9.04	.0258	13.36	15.76	.0251
20	6.70	7.52	.0274	9.71	10.83	.0276	14.46	16.89	.0273
21	6.02	6.74	.0299	9.05	10.25	.0306	13.89	16.19	.0299
22	5.33	5.89	.0328	8.31	9.44	.0329	13.23	15.29	.0325
23	4.99	5.48	.0360	7.84	9.00	.0363	12.82	14.71	.0358
24	4.49	4.82	.0387	7.06	8.28	.0393	12.13	13.92	.0387
25	4.11	4.30	.0411	6.50	7.77	.0418	11.73	13.37	.0410
26	3.88	3.93	.0411	6.10	7.45	.0445	11.63	12.98	.0436

RESIDUAL STRESS DATA

	Specimen No. 310, $t_o = .2408$			Specimen No. 311, $t_o = .2434$			Specimen No. 312, $t_o = .2337$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.10	.09	.0002	-.32	-.30	.0002	-.20	-.06	.0002
3	.36	.31	.0007	-.63	-.40	.0005	-.99	-.37	.0007
4	.69	.51	.0010	-.96	-.59	.0009	-1.56	-.61	.0014
5	1.42	1.29	.0018	-1.53	-1.00	.0014	-2.49	-1.03	.0028
6	2.06	2.07	.0024	-1.92	-1.18	.0021	-2.78	-1.11	.0038
7	2.51	2.61	.0029	-2.45	-1.50	.0030	-3.12	-1.41	.0049
8	2.91	2.99	.0031	-2.98	-1.73	.0040	-3.48	-1.61	.0061
9	3.40	3.52	.0036	-3.28	-1.95	.0049	-3.05	-1.14	.0066
10	5.64	5.78	.0053	-3.49	-2.15	.0063	-3.51	-1.69	.0092
11	7.38	7.57	.0065	-3.97	-2.84	.0098	-3.99	-2.23	.0122
12	9.13	9.57	.0077	-3.18	-1.99	.0098	-4.31	-2.53	.0155
13	10.17	11.01	.0086	-3.62	-2.65	.0129	-4.69	-2.92	.0179
14	13.26	14.71	.0015	-4.13	-3.43	.0159	-5.26	-3.46	.0207
15	14.43	15.94	.0139	-4.63	-4.03	.0194	-5.67	-3.97	.0240
16	14.96	17.07	.0173	-5.01	-4.51	.0218	-6.13	-4.28	.0266
17	14.37	16.64	.0204	-5.54	-5.21	.0248	-6.45	-4.59	.0301
18	13.84	16.23	.0235	-5.76	-5.59	.0281	-6.63	-4.74	.0329
19	13.30	15.84	.0264	-6.15	-6.10	.0302	-5.95	-4.18	.0329
20	14.04	16.45	.0288	-6.45	-6.60	.0335	-6.61	-4.47	.0353
21	13.22	15.72	.0317	-6.57	-6.91	.0368	-7.16	-4.91	.0383
22	12.46	14.94	.0343	-5.78	-6.10	.0368	-7.54	-5.25	.0414
23	12.06	14.49	.0372	-6.45	-6.91	.0396	-6.84	-4.51	.0414
24	11.63	13.86	.0400	-7.01	-7.60	.0422	-5.37	-2.89	.0463
25	11.29	13.48	.0423	-7.41	-8.10	.0454	-6.65	-4.10	.0501
26	11.14	13.15	.0451	-6.55	-7.33	.0454	-7.65	-5.05	.0533
27				-5.01	-5.67	.0508	-8.21	-5.56	.0559
28				-6.28	-6.98	.0543	-7.66	-4.97	.0580
29				-7.24	-8.01	.0571	-8.86	-6.07	.0616
30				-7.88	-8.98	.0595	-9.40	-6.58	.0639
31				-7.29	-8.17	.0621	-9.99	-7.41	.0670
32				-8.44	-9.30	.0653	-9.21	-6.28	.0693
33				-8.79	-9.74	.0679	-10.32	-7.27	.0717
34				-9.61	-10.51	.0712	-10.83	-7.81	.0745
35				-8.45	-9.37	.0733	-11.63	-8.52	.0771
36				-9.57	-10.47	.0759	-11.51	-8.27	.0801
37				-9.90	-10.86	.0789			
38				-10.65	-11.50	.0817			
39				-10.54	-11.29	.0846			

RESIDUAL STRESS DATA

	Specimen No. 313 $t_o = .2563$			Specimen No. 314 $t_o = .2562$			Specimen No. 315 $t_o = .2564$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.12	.11	.0003	.10	.18	.0003	.17	.14	.0003
3	.34	.39	.0005	.39	.46	.0005	.31	.32	.0005
4	.62	.60	.0008	.61	.62	.0008	.56	.69	.0008
5	.92	.90	.0013	.89	.87	.0013	.88	.87	.0013
6	1.24	1.22	.0018	1.30	1.27	.0018	1.53	1.51	.0023
7	1.60	1.52	.0023	1.60	1.54	.0023	1.99	2.01	.0031
8	1.82	1.70	.0031	1.86	1.76	.0031	2.42	2.50	.0041
9	1.92	1.80	.0043	1.95	1.82	.0049	2.54	2.61	.0051
10	1.94	1.82	.0056	1.96	1.84	.0061	2.54	2.62	.0062
11	2.08	1.88	.0072	2.00	1.85	.0074	2.57	2.67	.0095
12	2.04	1.83	.0089	1.98	1.83	.0095	2.58	2.69	.0118
13	2.05	1.86	.0125	1.98	1.83	.0118	2.59	2.68	.0169
14	2.12	1.89	.0171	1.99	1.83	.0167	2.67	2.71	.0223
15	2.12	1.90	.0225	1.99	1.84	.0220	2.72	2.75	.0269
16	2.14	1.92	.0276	1.99	1.85	.0274	2.74	2.74	.0321
17	2.18	1.93	.0322	1.99	1.86	.0323	2.78	2.77	.0369
18	2.20	1.99	.0378	2.06	1.87	.0379	2.88	2.80	.0421
19	2.21	2.00	.0414	2.04	1.87	.0423	2.87	2.82	.0477

	Specimen No. 316 $t_o = .2563$			Specimen No. 317 $t_o = .2559$			Specimen No. 318 $t_o = .2561$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.16	.17	.0003	.13	.16	.0003	.16	.11	.0003
3	.33	.32	.0005	.30	.32	.0005	.35	.37	.0005
4	.61	.60	.0008	.61	.65	.0008	.63	.64	.0010
5	.84	.83	.0013	.94	.95	.0013	.93	.92	.0013
6	1.50	1.53	.0023	1.56	1.57	.0023	1.63	1.68	.0023
7	1.98	2.20	.0031	2.19	2.15	.0031	2.15	2.18	.0031
8	2.42	2.54	.0041	2.89	2.88	.0041	2.83	2.87	.0041
9	2.52	2.71	.0054	3.31	3.40	.0054	3.27	3.37	.0054
10	2.53	2.72	.0062	3.44	3.54	.0061	3.35	3.58	.0064
11	2.59	2.72	.0095	3.57	3.71	.0095	3.47	3.68	.0095
12	2.59	2.72	.0115	3.53	3.67	.0118	3.44	3.64	.0115
13	2.60	2.72	.0167	3.52	3.63	.0171	3.44	3.62	.0166
14	2.63	2.73	.0220	3.56	3.63	.0225	3.44	3.66	.0215
15	2.69	2.74	.0264	3.53	3.63	.0274	3.34	3.68	.0264
16	2.69	2.78	.0315	3.51	3.59	.0325	3.38	3.67	.0315
17	2.72	2.80	.0364	3.51	3.63	.0376	3.45	3.69	.0361
18	2.82	2.85	.0410	3.59	3.64	.0420	3.53	3.76	.0412
19	2.81	2.84	.0466	3.58	3.55	.0473	3.48	3.69	.0469

RESIDUAL STRESS DATA

	Specimen No. 319 $t_o = .2487$			Specimen No. 320 $t_o = .2487$			Specimen No. 321 $t_o = .2487$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.25	.20	.0002	.25	.27	.0002	.22	.17	.0002
3	.47	.42	.0007	.49	.56	.0007	.42	.32	.0007
4	1.36	1.25	.0017	1.29	1.35	.0017	.75	.70	.0010
5	1.85	1.62	.0027	1.78	1.81	.0027	1.03	.97	.0015
6	1.84	1.62	.0037	1.79	1.88	.0037	1.49	1.38	.0020
7	1.80	1.59	.0050	1.79	1.87	.0052	2.24	2.10	.0037
8	1.78	1.59	.0065	1.80	1.90	.0065	2.24	2.03	.0045
9	1.77	1.58	.0077	1.80	1.89	.0075	2.23	2.03	.0050
10	1.77	1.53	.0095	1.80	1.89	.0092	2.24	2.06	.0099
11	1.78	1.53	.0109	1.87	1.97	.0112	2.24	2.01	.0154
12	1.83	1.53	.0122	1.89	1.98	.0124	2.25	2.01	.0203
13	1.79	1.51	.0174	1.99	2.00	.0177	2.30	1.95	.0276
14	1.76	1.44	.0221	2.14	2.07	.0226	2.33	1.94	.0313
15	1.77	1.43	.0284	2.32	2.19	.0291	2.34	1.91	.0368
16	1.77	1.44	.0358	2.57	2.28	.0361	2.42	1.93	.0420
17	1.78	1.47	.0413	2.75	2.38	.0413	2.43	1.92	.0473
18	1.78	1.45	.0465	2.91	2.48	.0465			
19	1.85	1.45	.0500	3.08	2.59	.0502			

	Specimen No. 322 $t_o = .2488$			Specimen No. 323 $t_o = .2487$			Specimen No. 324 $t_o = .2488$		
Step	dH_A	dH_B	dt	dH_A	dH_B	dt	dH_A	dH_B	dt
1	0	0	0	0	0	0	0	0	0
2	.27	.17	.0002	.26	.30	.0002	.26	.24	.0002
3	.45	.31	.0005	.44	.48	.0005	.41	.44	.0005
4	.72	.58	.0010	.76	.79	.0010	.75	.76	.0010
5	1.01	.89	.0014	1.07	1.10	.0015	1.01	1.04	.0014
6	1.50	1.28	.0020	1.63	1.66	.0020	1.58	1.62	.0020
7	2.46	2.16	.0037	2.94	2.90	.0037	2.88	2.76	.0037
8	2.50	2.17	.0047	3.12	3.07	.0047	3.09	2.94	.0045
9	2.51	2.10	.0060	3.23	3.08	.0052	3.14	2.95	.0057
10	2.58	2.26	.0107	3.15	3.07	.0102	3.12	2.95	.0107
11	2.60	2.30	.0167	3.14	3.07	.0157	3.08	2.93	.0157
12	2.65	2.29	.0214	3.16	3.07	.0204	3.09	2.86	.0206
13	2.71	2.27	.0271	3.22	3.06	.0264	3.11	2.83	.0261
14	2.79	2.34	.0328	3.25	3.05	.0316	3.09	2.82	.0316
15	2.38	2.86	.0381	3.28	3.07	.0366	3.09	2.78	.0371
16	2.94	2.40	.0435	3.34	3.08	.0418	3.11	2.77	.0423
17	3.00	2.40	.0488	3.42	3.08	.0470	3.17	2.78	.0473

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